

Socially Constructed Environmental Issues and Sport:
A Content Analysis of Ski Resort Environmental Communications

Sam Spector, B.Sc.

Submitted in partial fulfilment of the requirements for the degree of
Master of Arts in Applied Health Sciences
(Sport Management)

Under the supervision of Chris Chard, PhD & Cheryl Mallen, PhD

Faculty of Applied Health Sciences, Brock University
St. Catharines, Ontario

Sam Spector © January, 2012

Abstract

Due to the impact of sport on the natural environment (UN, 2010), it is important to examine the interplay between environmental issues and sport (Hums, 2010, Mallen & Chard, 2011; Nauright & Pope, 2009; Ziegler, 2007). This research content analyzed 82 ski resort environmental communications (SRECs). These communications were rated for their prominence, breadth, and depth using the delineation of environmental issues provided by the Sustainable Slopes Program (SSP) Charter. This data was compared to the resorts' degree of environmentally responsible action as rated by the Ski Area Citizens' Coalition (SACC). An adaptation of Hudson and Miller's (2005) model was then used to classify the ski resorts as inactive, reactive, exploitive, or proactive in their environmental activities. Recommendations have been made for standardization and transparency in environmental disclosures and an environmental management system to aid ski resorts in moving from ad hoc processes to a systematic and comprehensive framework for improving environmental performance.

Acknowledgements

I would like to thank *Dr. Chris Chard, Dr. Cheryl Mallen, and Dr. Craig Hyatt.*

Their support and guidance has been truly invaluable. Because of them I am not only proud of the final product but have also found the process to be exciting and rewarding.

Table of Contents

Chapter One: Introduction	1
A Brief History of Environmentalism.....	1
The Increasing Complexity of Environmental Issues	5
A Brief History of the Sport of Skiing.....	8
An Overview of the Chapters	10
Chapter Two: Literature Review	13
Sport Management and Environmental Issues.....	13
Environmental Issues in the Context of Skiing.....	34
Factors that Encourage or Inhibit Proenvironmental Behaviour	41
The Role of Ski Resorts and Ski Resort Environmental Communications (SRECs) ...	49
Theoretical Perspectives Regarding the Human-Environment Interaction	63
Chapter Three: Methods	70
Research Orientation and Approach	71
Data Collection	73
Data Analysis	75
Trustworthiness.....	81
Limitations	82
Chapter Four: Findings	84
Summary of Findings.....	84
Socially Constructed Environmental Issues and SRECs	86
Prominence, Breadth, and Depth	94
Profiles of Inactive, Reactive, Exploitive, and Proactive Ski Resorts	99
Topics of Clarification	108
Chapter Five: Conclusions.....	110
Key Findings.....	110
Recommendations.....	112
Possibilities for Future Research	116
References.....	118
Ski Resort Website References	133
Appendix A: Ski Resorts Included in the Study	139
Appendix B: The Ski Area Citizens' Coalition (SACC) Grading Methodology.....	142
Appendix C: The Sustainable Slopes Program (SSP) Charter.....	144

Figures

Figure 1. A model of pro-environmental behaviour	46
Figure 2. Interaction of internal, external, and moderating factors	51
Figure 3. Proportion of SSP members that filed annual assessments	58
Figure 4. Concentric spheres decision-making model	66
Figure 5. An overview of the research methods	71
Figure 6. Relationship between the data sources included in this study	74
Figure 7. A model for responsible marketing (Hudson & Miller, 2005)	78
Figure 8. An adaptation of Hudson and Miller's (2005) model	79
Figure 9. The grading methodology for environmental communication	79
Figure 10. Summary of findings	85
Figure 11. Breadth and depth of the SRECs	86

Acronyms

EMS: Environmental Management System

EPA: Environmental Protection Agency

ES: Environmental Sustainability

IOC: International Olympic Committee

NSAA: National Ski Areas Association

SACC: Ski Area Citizens' Coalition

SRECs: Ski Resort Environmental Communications

SSP: Sustainable Slopes Program

UNEP: United Nations Environment Programme

Chapter One: Introduction

The United Nations (UN) has stated that “whenever a person engages in sport there is an impact on the environment” (UN, 2010, n.p.). As the environment has become a prominent topic of inquiry and debate, it is necessary to examine the interplay between environmental issues and sport (Hums, 2010; Nauright & Pope, 2009; Ziegler, 2007). Mallen, Stevens, and Adams (2011) found that environmental sustainability (ES) was addressed in only 17 of the 4,639 sport management articles they analyzed. As will be discussed in the literature review, environmental issues, while certainly on the radars of many sport management academics and practitioners, have yet to be established as core concepts and guiding concerns within sport management. Due to the immense ecological footprint of sport, this lack of emphasis on ES urgently needs to be addressed (Thibault, 2009).

A Brief History of Environmentalism

In order to comprehend the current state of environmentalism within sport a short history of how environmental issues have become important concerns across disciplines is presented. To begin, while Thomas Malthus did not specifically address environmental issues, his 1789 “An Essay on the Principle of Population” did call into question the ability of the earth to support the exponentially growing human population (Ali & Hoque, 2008). Malthus’ treatise spurred debates regarding the ability of technological and scientific innovations to increase the carrying capacity of the earth, thus allowing for a much larger population than would be sustainable in a system where resources grew only linearly (Ali & Hoque, 2008). Malthus, however, was concerned primarily with the

meeting of human needs (i.e. the population grows exponentially while food resources may not) rather than environmentalism *per se* (Barton, 2001).

Thus, while sustainability was being contemplated at least as early as the 1700s in the western world, Barton (2001) identified the late nineteenth and early twentieth century as the true beginning of environmental initiatives, mostly enacted under British Imperial rule. In 1855 Lord Dalhousie's Forest Charter was introduced in India and subsequently spread through British Colonies around the world (Barton, 2001). This Charter set aside public land to serve "not only environmental but also industrial, settlement, and budgetary purposes" (Barton, 2001, p. 529-530). Early environmental efforts concentrated on forests as they constituted a key natural resource and were presumed to contain the majority of biodiversity (Ali & Hoque, 2008; Barton 2001). As stated by Barton (2001), "Few today realize how fascinated the public found forestry in the late nineteenth century" – it "was the flagship of early environmentalism and a fledgling ecology" (p. 541-542). This concern with protecting the forests was heightened in the early 1900s by the massive forest resource depletion caused by World War I (Barton, 2001).

McGrew (1990) argued that environmentalism was primarily initiated as a reaction to the industrial revolution. Prominent 19th century writers such as Karl Marx, John Stuart Mill, and Charles Dickens were critical of industrialism and the prospect of unconstrained growth (McGrew, 1990). In the United States, the years around the turn of the 19th century saw the beginning of the Progressive Era which featured a focus on conservation and initiated the creation of a variety of government environmental organizations and agencies (Buttel, 2003; McGrew, 1990). The post-World War II era

ushered in the emergence of the welfare state which utilized bureaucracy as the primary delivery mechanism for policies and viewed risk as something that people needed to be protected against (Saint-Martin, 2007). This trend of governmental “command-and-control” was still underway in the 1970s which became an extremely significant decade in the U.S. in terms of environmental protection – 16 of the 27 major federal environmental laws were enacted and the Environmental Protection Agency (EPA) was created (Buttel, 2003; McGrew, 1990). Britain’s Department of the Environment was also formed in the 1970s (McGrew, 1990).

In Canada, the early 1970s saw the creation of Greenpeace, formed by a group of activists in British Columbia to protest U.S. nuclear testing at Amchitka, a small Alaskan island that “was the last refuge for 3000 endangered sea otters, and home to bald eagles, peregrine falcons and other wildlife” (Greenpeace, 2009, n.p.). Greenpeace would eventually become “one of the most important international nongovernmental organizations” (Paehlke, 2000, p. 163). The Canadian environmental movement heightened in the late 1980s - the environment was chosen as the most important issue facing the country in public opinion polls, Canadian Jim MacNeill was an influential figure in the publication of *Our Common Future* (also known as the Brundtland Report – see page 14 of this manuscript), and the Montreal Protocol (which dealt with ozone depletion) was initiated (Paehlke, 2000). Paehlke (2000) noted that the environmental movement of the 1980s and 1990s was markedly different than that of the 1970s. In the 1970s there was often “a sense that an environmentalist was thoroughly out-of-step with society” whereas by the 1980s and 1990s “environmental ideals had come to be widely held (or at least asserted) within and by North American and global political elites” (p.

171). This shift from the fringe to the mainstream is also reflected on a municipal level. Consider, for instance, that “in the 1970s most Canadian municipal governments barely tolerated volunteer-staffed recycling depots – in the 1980s most took significant positive initiatives” (Paehlke, 2000, p. 171-172).

The economically tumultuous 1970s created dissatisfaction with top-down governance (Albo, 2002; McGrew, 1990; Saint-Martin, 2007). Conditions, therefore, were ripe for change and the era of government intervention was to shift in the 1980s towards deregulation and privatization under the “New Right” administrations of President Reagan in the U.S. and Prime Minister Thatcher in the U.K. (Albo, 2002; Buttel, 2003). The neoliberal model of governance, thus, began to dominate. Albo (2002) stated, “The basic idea [of neoliberalism] is that the state should be limited in its role in modern society apart from securing private property rights and contracts” (p. 46).

Due to the focus on deregulation and privatization across political parties, the ability of government agencies (such as the EPA in the U.S.) to deal with environmental issues began to be doubted (Buttel, 2003). As a result, the EPA, despite being “the most important U.S. federal environmental protection bureaucracy, has never acquired cabinet status and tends to have far less influence in the federal government than do agencies such as the Department of Defense” (Buttel, 2003, p. 319). Command-and-control strategies of environmental protection were increasingly seen as inferior to market-based approaches (Buttel, 2003). Plumptre and Graham (2000) said that “many people are beginning to believe that important issues of public concern, such as environmental issues or the development of information and communications technology, are too complex to be addressed by government acting alone” (p. 9).

More recently, in some countries neoliberal ideals have begun to be challenged as governments are increasingly being held accountable for the social consequences of the deregulation and privatization strategies they pursued (Saint-Martin, 2007). Saint-Martin (2007) said, “Although these policies achieved general economic growth, they put the social body under increasing stress” (p. 283). Under this emerging paradigm, often labeled the “Social Investment State” or “Third Way,” partnership is favoured over both bureaucracy (the welfare state) and the free market (neoliberalism) as the venue for effecting change (Saint-Martin, 2007). Having experienced the limitations of both the big government of the welfare state and the reliance on deregulation and privatization of neoliberalism, the current era is marked by ambiguity regarding the optimal “mix” of these dichotomous governance strategies. This uncertainty is played out in the environmental literature, with scholars and practitioners forced to cope with an increasingly complex array of stakeholders and possible strategies.

The Increasing Complexity of Environmental Issues

Buttel (2003) stated that from the mid-1800s until the 1960s environmental efforts could be classified according to their focus on preservation (protecting wildlife and natural areas) or conservation (improving management strategies and technologies in order to achieve better efficiency and reduce waste). However, the environmental movement has become increasingly multifaceted since the 1960s (Buttel, 2003). As noted by Buttel (2003), “there is now increased differentiation between the large Washington, D.C. – and New York – based national and international environmental groups, on one hand, and much smaller local environmental groups on the other” (p. 311).

This differentiation, however, extends far beyond the relative size of the environmental groups and organizations. Consider, for instance, the vastly dissimilar ideological approaches taken by relatively conventional environmental organizations such as Audubon compared to more radical and on occasion even quasi-militant groups such as Greenpeace (Buttel, 2003). The environmental movement has spawned groups utilizing strategies including local and state government, feminism, grassroots and community organization, militancy, empowerment of the disenfranchised, religion, law and civil rights, international trade and globalization, development of third world economies, and advocacy on behalf of indigenous peoples. Of course, a variety of anti-environmentalist, or “anti-alarmist,” groups have formed to respond to the growing focus on environmental issues across disciplines and around the world (Buttel, 2003).

Sport has also played a role in the increasingly complex environmental movement (and vice-versa). Sport management scholars such as Ziegler (2007), Nauright and Pope (2009), and Hums (2010) have emphasized the need to consider the link between sport and various social concerns. Mallen and Chard (2011) argued that the environment should be considered a primary stakeholder of sport. The relationship between sport and environmentalism can be identified as early as 1974, when Denver, Colorado opted not to host the Winter Olympic Games due to the environmental impacts the event would exert (Lenskyj, 1998). This relationship, however, became much more explicit in 1994 when the International Olympic Committee (IOC) identified the environment as the “third pillar” of the Olympic Games (Cantelon & Letters, 2000). Also in 1994, the IOC and the United Nations Environment Programme (UNEP) joined forces, further emphasizing the centering of environmental issues within sport.

The environmental impacts of large-scale sport events have come under scrutiny (e.g. Collins & Flynn, 2005; McCrory, 2006; Schmidt, 2006). The environmental issues present within individual sports such as golf (Schmidt, 2006; Wheeler & Nauright, 2006) and skiing (Holden, 2000; Schmidt, 2006) have also been considered. As noted by Schmidt (2006), “ironically, even as sports promote health, they can also degrade the environment upon which good health depends” (p. 287). While the link between sport and the environment is often discussed, there is a paucity of focus on these issues within the sport management literature (Mallen et al., 2011). Further research is needed in this area as “[s]port is not immune to the contemporary responsibilities of protecting the natural environment” (Mallen et al., 2011, p. 240).

In the present study downhill skiing will be advanced as a particularly suitable context in which to consider the interplay between sport and the environment. Environmental issues within the context of skiing were brought to the centre stage when a group of radical environmentalists launched an arson attack on the Vail ski lodge in 1998 (Steelman & Rivera, 2006). Before this attack the skiing industry was largely dismissive of pressure from environmental groups, but the assault on the Vail ski lodge heightened public awareness and put the issue on the media’s agenda (Steelman & Rivera, 2006). Skiing exerts a large environmental impact (Burki, Elsasser, & Abegg, 2003; Moen & Fredman, 2007; Scott, McBoyle, & Mills, 2002) but is simultaneously heavily reliant on particular environmental conditions (Hamilton, Rohall, Brown, Hayward, & Keim, 2003; Hudson, 1996; Moen & Fredman, 2007). This complex, reciprocal relationship constitutes the primary motive for selecting skiing as the setting for considering the interplay between sport and the environment.

A Brief History of the Sport of Skiing

Skiing artifacts dating back to 2500 BCE have been found in Scandinavia (Allen, 1985). As noted by Formenti, Aridigò, and Minetti (2005), “cross-country skiing constituted the compulsory means of transport for most of the ethnic groups living north of the Arctic Polar Circle for millennia” (p. 1561). These groups, forced to adopt nomadic lifestyles to cope with dwindling food supplies during long winters, used skis to improve efficiency and conserve valuable calories (Formenti et al., 2005). Skis were initially a utilitarian concept, but as early as 1000 CE they were being utilized for racing, as indicated by Icelandic poetry (Lund, 1996). In Telemark, a city in Norway, cross-country skiing technology improved drastically with the development of cambered skis (which are shaped like a bow, bending upward near the binding) and much sturdier bindings circa 1850 (Lund & Masia, 2003). The cambered ski, which could glide without sinking into the snow, allowed the first turns on downhill slopes to be made; and the newly designed bindings allowed the skier’s boots to be firmly attached to the skis (Lund & Masia, 2003). A Norwegian farmer by the name of Sondre Norheim, often referred to as the father of modern skiing, is largely credited with these advances in skiing technology (Lund, 1996). This technology, in turn, was imported to North America by Scandinavian and other European immigrants (Coleman, 1996). Norwegian immigrants played a particularly important role in this process, as evidenced by Norheim himself immigrating to North Dakota in 1884 (Lund, 1996).

Skiing had become a popular sport in the European Alps by the late 19th century and North Americans began traveling to these resorts in the early 1900s (Coleman, 1996). Cross-country skiing, ski jumping, and Nordic combined (a combination of cross-country

and ski jumping) were included in the first Winter Olympic Games, held in Chamonix, France in 1924 (Lund, 1996). Alpine (downhill) skiing was first featured in the Winter Olympics in 1936, held in Germany (Lund, 1996). Thus, by 1936 “alpine skiing had pretty well settled in on the Continent but North America remained on the periphery” (Lund, 1996, n.p.). However, in the U.S. in the years following World War II “the ski industry combined the sport of skiing with the business of tourism as never before, encouraging the growth of new ski resorts...and a new culture of consumption to go along with them” (Coleman, 1996, p. 587). Sun Valley in Idaho, the first major U.S. ski resort¹, was opened in the late 1930s (Rivera & de Leon, 2004). Many other large resorts, such as Aspen, Taos, and Vail, were built between the 1940s and 1960s.

As a reflection of the European roots of North American skiing, resorts attempted to mirror the look and feel of chalet-style resorts in the Alps (Coleman, 1996). Skiers, for their part, emulated the European skier’s dress code by donning Norwegian sweaters, Bogner ski pants (imported from Germany, these stretchy, tight pants revolutionized skiing fashion), and Bavarian boots (Coleman, 1996). This shift toward travelling to large ski resorts on vacation, as opposed to spending the day at a local ski area, created a new “ski culture” which “hinged on having the physical ability and financial wherewithal to live that lifestyle” (Coleman, 1996, p. 590). Allen (1985) said that skiing “has been variously an aristocratic pursuit and a folk necessity, an entertainment for some and an occupation for others” (p. 55).

The skiing industry stagnated in the 1980s, leading to competition and consolidation (Rivera & de Leon, 2004). Indeed, in the United States there were 33%

¹ “Ski resort(s)” and “ski area(s)” will be used interchangeably.

fewer ski resorts in 2002 than 1982 (Rivera & de Leon, 2004). This is not to say that the industry is small – the U.S. skiing industry’s annual revenue for the 2002-2003 season was estimated at \$4.2 billion (Rivera & de Leon, 2004). The ski resorts included in this study are all located in the western United States – either in the Rocky Mountain region (Colorado, Idaho, Montana, New Mexico, Utah, and Wyoming) or the Pacific West region (Alaska, Arizona, California, Nevada, Oregon, and Washington State). While the 167 ski areas in the western U.S. comprise only one-third of ski resorts in the country, they have consistently attracted over 50% of annual skier visits (Rivera & de Leon, 2004). Unlike other regions, over 90% of the western ski resorts occupy federally-owned land (Rivera & de Leon, 2004). As ski resorts on federally-owned land have to pay a portion of their annual income to the U.S. Forest Service there is significant potential for conflicts of interest as the government simultaneously seeks to preserve public land but also receive payments from successful ski resorts (Steelman & Rivera, 2006).

An Overview of the Chapters

The literature review, after providing a brief discussion of what is commonly meant by terms such as “sustainability” and “environmental issues,” will endeavour to build the case that sport can no longer afford to avoid directly addressing environmental issues. More ardently, it will be argued that environmental issues must be a core concept within sport as the sustainability of not only our environment but also our sports depends on it. This position will be bolstered by considering both the various environmental impacts of sport and also the ways in which sport is reliant on the environment.

Downhill skiing² will be advanced as a particularly suitable context in which to consider the magnitude and intricacy of environmental issues, and evidence will be provided that indicates that current practices are unsustainable. The determinants of proenvironmental behaviour will be discussed in order to consider how environmental communications may contribute to shaping the behaviours of stakeholders. Attention will then be turned to the role that the environmental communications of ski resorts may play in prompting the necessary changes to improve the sustainability of skiing while simultaneously appealing to environmentally-conscious customers. Finally, the literature review will end with a deeper discussion of the same topic with which it began – the difficulty of delineating terms such as sustainability and environmental issues. A much broader range of theoretical perspectives on the interaction between humans and the environment will be highlighted, stressing the diverging social constructions and multiple meanings of these terms.

The methods chapter will begin with a brief discussion of social constructionism, the epistemological stance adopted herein. The data sources utilized for this study and the methods of analyzing them will then be discussed. The analysis is directed at understanding how the environmental communications of ski resorts compare to the resorts' actual degree of environmentally responsible action. Ski resort environmental communications (SRECs), published on the resorts' websites under a link such as "Environment" or "Sustainability," are potentially instrumental in shaping proenvironmental behaviours and generating marketing benefits. Therefore, it is necessary to evaluate how accurately the SRECs capture the environmental issues present

² "Skiing" will refer to downhill skiing hereafter.

within the context of skiing and the ski resorts' actions to address those issues. An adaptation of Hudson and Miller's (2005) model (Figure 8, page 79) for responsible marketing will be utilized to compare the environmental communications (the SRECs) to the degree of environmentally responsible action (as graded by the Ski Area Citizens' Coalition) of 82 ski resorts in the western United States.

The guiding research question for this study is:

RQ: How are environmental issues socially constructed within the environmental communications of the ski resorts that are graded by the Ski Area Citizens' Coalition, and according to an adaptation of Hudson and Miller's (2005) model (see Figure 8) would these resorts be classified as inactive, exploitive, reactive, or proactive?

The purpose of this research is to analyze the SRECs to determine how environmental issues are socially constructed within them and to compare those social constructions to the actual proenvironmental actions taken by the ski resorts.

Chapter Two: Literature Review

This literature review focuses on providing an understanding of the following five areas of inquiry:

1. Sport management and environmental issues
2. Environmental issues in the context of skiing
3. Factors that encourage or inhibit proenvironmental behaviour
4. The role of ski resorts and ski resort environmental communications
5. Theoretical perspectives regarding the human-environment interaction

Sport Management and Environmental Issues

Both academics and practitioners in sport management now must grapple with questions such as: “What evidence do we have that sport as a social institution is really making a positive contribution to society?” (Ziegler, 2007, p. 297). Similarly, Nauright and Pope (2009) noted that an emphasis has increasingly been placed on “the *broader social consequences* of sport” (p. xxiv). Hums (2010) echoed these concerns, stating that “students need to know the actions they can take with their events and their facilities to contain the impact of sport on the environment” (p. 5). Clearly, “environmental sensitivity is moving from the fringe to center stage” (Falt, 2006, p. A268). Indeed, environmental issues in sport have been discussed in contexts such as education (e.g. Hums, 2010), community organizations (e.g. Pitter, 2009), and large-scale events (e.g. Babiak & Wolfe, 2006). However, “our ecological footprint related to sport is immense and, for the most part, goes unnoticed” (Thibault, 2009, p. 11).

Perspective on defining “sustainability” and “environmental issues.”

This research project applies a social constructionist perspective. Thus, the author of this manuscript is cognizant of and concerned about superimposing definitions upon concepts such as “sustainability” and “environmental issues.” Of greater interest is how these concepts are operationalized by the authors who utilize them. While no cogent, transcendental delineations will be provided, it remains useful to begin with a description of how these terms are commonly (though not harmoniously) conceptualized by the authors that employ them. At the end of this literature review, in the section entitled “Theoretical Perspectives Regarding the Human-Environment Interaction,” a more conceptual and critical view of the conventional definitions will be discussed.

Sustainability and sustainable development.

The difficulty of defining terms such as “sustainability” is noted by Stubbs and Cocklin (2008) when they argued the following:

Sustainability itself is a contested concept...there are many terms used in the literature such as sustainable development, human sustainability, social sustainability, ecological sustainability, environmental sustainability, and corporate sustainability as well as aligned concepts of corporate social responsibility and corporate citizenship. (p. 104)

The concept of sustainability is frequently linked to the notion of development as seen in the often-cited 1987 UN Brundtland Report: “Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (n.p.). Further, as noted in the IOC’s Sustainable Sport and Event Toolkit (Vancouver 2010 & AISTS, 2009), “the concept of sustainability usually

includes the areas of environmental, social, and economic development” (p. 2). The *IOC Guide on Sport, Environment and Sustainable Development* also stated, “An ecosystem’s functions are not only ecological in nature, but also affect economic and social development” (p. 9). The anthropocentric view of sustainability constructed by the UN and the IOC prioritizes the maximal fulfillment of human wants and needs within the limits of sustainability. The UN Brundtland Report stated that “sustainable development does imply limits - not absolute limits but limitations imposed by the present state of technology and social organization on environmental resources and by the ability of the biosphere to absorb the effects of human activities” (n.p.). Further complicating the notion of sustainability is the fact that, while sport certainly impacts the environment, the environment also impacts sport. Fyall and Jago (2009) highlighted this two-way relationship between sustainability and sport by stating:

Whilst it is important from an ethical perspective to understand the impact that sport and tourism has on the external environment so that these impacts can be more effectively managed, it is also important that the impact of changes in the external environment on the sustainability of sport and tourism are understood in order to ensure the long term viability of the sector. (p. 77)

Environmental issues.

The phrase “environmental issue(s)” will be employed as a catch-all term for the environmental concerns present in sport; a necessity due to both the breadth of sports examined and the variance in concerns across people, organizations, and regions. Importantly, the author is not claiming to determine which environmental issues are significant. Rather, it is hoped that a case can be built that many sports have numerous

impacts, some number of which will likely be of concern or be seen as substantial. Mallen and Chard (2011) questioned how this “multi-state environmental reality” might impact sport, drawing attention to both the level of sustainability desired and which issues should be prioritized. For example, while one individual may care about the disruption of wildlife caused by night skiing, others may deem that issue as insignificant and instead be concerned with the increasing cost of lift passes due to reliance on artificial snowmaking that will result from the effects of global warming. This literature review, thus, will endeavour to demonstrate that the environmental issues in sport, especially skiing, need to be considered to some extent regardless of one’s own perspective on the environment. Attention to environmental issues is beneficial for many (not mutually-exclusive) reasons including reducing operational costs, improving marketing strategies, anticipating and thus alleviating strains resulting from environmental regulations, and enhancing the sustainability of the sport. Alternatively or concordantly, focusing on environmental issues may be seen by some as a basic human responsibility regardless of any competitive advantages provided.

Walker (2005), who placed the balance and imbalance between the human-environment interaction as the central issue of environmental sociology, noted that “initiatives” can come from either side (i.e. from humans and from the environment). Anthropogenic stresses are mainly comprised of resource depletion and pollution but also include destruction of biodiversity, loss of habitats, extinctions, and other stresses (Walker, 2005). Environment-instigated stresses include meteorological hazards (drought, flood, extreme temperatures, etc.), geomorphic hazards (earthquakes, avalanches, etc.), and biological hazards (diseases and infestations, dangerous plants and

animals) (Walker, 2005). Stresses need not exclusively be prompted by humans or the environment. As noted by Walker (2005):

[E]nvironmental problems form a continuum, with anthropogenic environmental stress at one pole and natural hazard at the other. In the middle are compound problems, where human activities and natural processes synergize. (p. 97)

This conceptualization is useful as this literature review will consider not only the environmental impacts of sport but also the ways in which the environment affects sport and the compound problems (such as climate change).

The environmental impacts of sport and efforts to improve sustainability.

As quoted at the beginning of this manuscript, “whenever a person engages in sport there is an impact on the environment” (UN, 2010, n.p.). The initial response to the question of who in sport is impacting the environment is “everyone.” Further, it can be argued that the natural environment should be viewed as a primary stakeholder in sport (Mallen & Chard, 2011). However, as is often the case, the concept of environmental impact varies drastically depending on the sport in question and where, when, and how it takes place. An overview of environmental issues present in the contexts of the Olympic Games, other large sport events, sport facilities, and individual sports and activities will be outlined below.

The Olympic Games.

Environmental issues affected the IOC as early as 1974 when the city of Denver, Colorado rejected the opportunity to host the Winter Games because they were deemed to be too environmentally risky (Lenskyj, 1998). However, efforts to protect the environment became much more prominent and a codified goal of the IOC after the well-

publicized poor environmental performance of the 1992 Winter Olympics at Albertville, France (Cantelon & Letters, 2000). This poor performance was instrumental in the IOC forming the Commission for Sport and the Environment in 1994, making the environment the “third pillar” of the Olympic Games (Cantelon & Letters, 2000). Cantelon and Letters (2000) purported that the 1994 Winter Olympics at Lillehammer, Norway was the IOC rebranding itself as “green” in response to increasing global pressure to consider environmental impact. Lesjø (2000) pointed out that the bid for the Lillehammer Games was accepted based on the notion of the “Compact Games” (i.e. the event would take place in a small city) and only later was the idea of the “Green Games” added to respond to institutional and external pressures. Lesjø (2000) also stated that: “Suffering from a crisis of legitimacy, the IOC wants to be seen as an environmentally responsible organization” but “an important question that remains is whether this ‘light green’ strategy can provide the IOC with long-term credibility” (p. 293). The focus on environmental issues has not only been at the organizational level. In 2006 the IOC outlined a voluntary code that encourages Olympic athletes to reduce impact and be proenvironmental role models (Mallen et al., 2011).

Regardless of the specific motives for the transition, it is important to study the process as it could be argued that the Olympics are reflective of paradigm shifts occurring in sport in general. The relationship between the IOC and environmental issues provides insight into the complex and multifaceted nature of attempting to reduce the impact of major events. Groups as disparate as International Sports Federations, local organizing committees, and Greenpeace end up being involved in the process of planning and executing the Olympic Games (Cantelon & Letters, 2000; Lenskyj, 1998). Definitions of

ES vary latitudinally and longitudinally on several levels such as between members and groups in individual organizations, between organizations, and between regions. As noted by Walker (2005), “environmental processes, and therefore problems, are geographically distributed” (p. 97) along both temporal and spatial dimensions. As organizations like the IOC act both globally and locally, environmental concerns in these various contexts may well be diverging and perhaps even at odds (Cantelon & Letters, 2000).

Mallen et al. (2011), in their review of literature, demonstrated that “[s]port practitioners have begun to respond to the ES movement” (p. 243). As an example of the practitioners’ involvement, the Sustainable Sport and Event Toolkit was created by the Vancouver Organizing Committee for the 2010 Olympic and Paralympic Winter Games (Vancouver 2010) and the International Academy of Sport Science and Technology (AISTS); it exemplifies a pragmatic tool that is useful for practitioners. This document includes a worksheet with a list of specific goals alongside descriptions of how to go about them, space to write the names of who they were delegated to, a checklist to determine the status of the items, and space to include relevant resources (Vancouver 2010 & AISTS, 2009).

More recently, Roper (2006) discussed the London bid for the 2012 Olympic Games and that “London’s Olympic Park will be a low emission (carbon dioxide) zone, utilizing low or no emission vehicles” (p. 1). Further, “the UK will promote investments in developing country renewable energy projects, to counterbalance carbon emissions resulting from international air travel by athletes, officials, and others who will be flying to London for the 2012 Olympics” (Roper, 2006, p. 1). Importantly, this developing country offset program further demonstrates the complexity inherent in environmental

issues. Aside from offsetting emissions, the London 2012 Olympics are being used to raise awareness of environmental and social issues both globally (worldwide opinion) and locally (specific renewable energy projects in developing countries). Again, the intersection between the global and local that Cantelon and Letters (2000) discussed can be seen playing out in interesting ways.

Despite the IOC's efforts, the Olympic Games continue to significantly impact the environment, with organizations such as Greenpeace calling for requirements rather than guidelines and a better system of rewards and punishments (Paquette, Stevens, & Mallen, 2011). Paquette et al. (2011), in their content analysis of documents from the IOC and the Organizing Committees for the Olympic Games, found that the lack of oversight and diverging organizational paradigms has meant that ES goals set during the bidding process often remained unfulfilled in the staging phase.

Sport events.

Sports events have the potential to significantly impact the natural environment, and the United Nations Environment Programme (UNEP) provides a list of the common ways that includes:

- Development of fragile ecosystems or scarce land for sport
- Noise and light pollution from sport
- Consumption of non-renewable resources (fuel, metals, etc.)
- Consumption of natural resources (water, wood, paper, etc.)
- Emission of greenhouse gases by consuming electricity and fuel
- Ozone layer depletion (from refrigerants)
- Soil and water pollution from pesticide use

- Soil erosion during construction and from spectators
- Waste generation from construction of facilities, and from spectators (UN, 2010, n.p.)

To further paint a picture of the potential effect of sport events on the natural environment consider the following: pre-event estimates of the 2006 FIFA World Cup predicted that the tournament would produce 250,000 tonnes of greenhouse gases and each individual game would require two to three million kilowatt hours of energy and produce five to ten tonnes of waste (McCrary, 2006; Schmidt, 2006). Also, the 2004 Athens Olympic Games generated an estimated 500,000 tonnes of greenhouses gases (McCrary, 2006; Schmidt, 2006). The greenhouse gases produced as a result of the 2004 Athens Olympic Games were “roughly comparable to what a city of 1 million people would emit over a similar period” (Schmidt, 2006, p. A287). Greenhouse gas emissions are not the only prevalent environmental concern present within the context of sport events. For example, the bobsledding track at the 2006 Torino Winter Olympics contained 48 tons of ammonia that could harm wildlife and humans if leaked (Schmidt, 2006).

Another way of conceptualizing the environmental impact of sport is ecological footprint analysis. This type of analysis “provides a ‘snapshot’ estimate or measure of the area of land and water ecosystems required to provide the resources and assimilate the wastes of a given population” (Collins & Flynn, 2005, p. 279). An ecological footprint is measured in global hectares per person, and the Earth is estimated to have a biocapacity of 1.8 global hectares per person while humans are currently living at 2.2 global hectares per person (Collins, Flynn, Munday, & Roberts, 2007). Collins et al. (2007) used

ecological footprint analysis to estimate the impacts (travel, food and drink, infrastructure, and waste) of the 2003/04 Football Association Cup Final in Cardiff, Wales. Collins et al. (2007) found that attending the Cup Final caused an additional 0.0364 global hectares per person of impact which translated into *seven times more impact per person* than would have been incurred if not attending the event. Collins, Jones, and Munday (2009) stated that “organisers are taking steps towards more sustainable procedures” but a “holistic and consistent environmental impact ‘toolkit’ for major events is some way off” (p. 835).

The triple bottom line is an approach in which sport may be seen as prompting economic, social, and environmental impacts (Fairley, Tyler, Kellet, & D’Elia, 2011). Consideration of environmental impact, thus, is necessary to fully and accurately capture how sport affects our lives. Fairley et al. (2011) applied the triple bottom line approach to the Formula One Australian Grand Prix. Interestingly, the event had been given a “dispensation” by the Australian government in effect meaning that “the Australian Grand Prix Corporation has the legal right to operate with environmental impunity” (Fairley et al., 2011, p. 144). Given the large amount of public funding involved (approximately \$40 million Australian dollars per year), the “net benefits and therefore long-term sustainability” of the event “have been heavily scrutinized in recent years” (Fairley et al., 2011, p. 141). Triple bottom line analysis of the F1 Australian Grand Prix is insightful in that it highlights the complex “mixed economy” of stakeholders involved (Fairley et al., 2011). The triple bottom line approach does not necessarily prioritize ES over economic and social sustainability. As noted by Fyall and Jago (2009), while “much of the discussion regarding sustainability relates only to the environmental dimension,

true sustainability also includes both the social and economic dimensions under the umbrella of what is commonly termed triple bottom line sustainability” (p. 77). The triple bottom line model highlights the notion that if environmental goals preclude economic or social sustainability they will likely be unsuccessful, especially in a capitalist market.

Many of the sport management articles that discuss environmental issues focus on large-scale events. Babiak and Wolfe (2006) discussed the efforts of Super Bowl XL to use tree planting to offset emissions resulting from the additional vehicle traffic caused by the event. Environmental groups felt that the visibility of the effort was more important than the actual benefits obtained from planting 1,500 trees (Babiak & Wolfe, 2006). This notion of visibility highlights the fact that benefits from events “going green” must be thought of both in terms of the physical improvements and the more qualitative “marketing effects” that work to shape the public’s opinions and attitudes (Roper, 2006). The UNEP has realized the potential advantages of these marketing effects and has made teaming up with sport an explicit element of their strategy (Falt, 2006). Indeed, in 1994 the IOC and the UNEP “signed an agreement to join forces to raise environmental awareness and education” (Mallen et al., 2011, p. 241). Further, many of the IOC’s environmental initiatives were modelled on the UN’s Agenda 21, a document and program developed in 1992 that “proposed sustainable development be implemented by the UN” (Paquette et al, 2011, p. 356).

Another example in the sport management literature of efforts to reduce impact comes from a mixed-methods research study on the environmental performance of the 42nd International Children’s Games, held in 2008 in San Francisco, California. This annual, IOC-sanctioned event showcases the performances of elite 12 to 15 year old

athletes (Mallen, Stevens, Adams, & McRoberts, 2010a). Mallen et al. (2010a) found that the event organizers demonstrated a significant level of effort but ultimately weak to moderate environmental performance was achieved. The organizers of the 42nd International Children's Games failed to achieve better environmental performance due to the following three barriers:

- Structural: isolated committees and divisions
- Systemic: lack of internal and external communication, an ad hoc approach to resource allocation, and breakdowns in planning
- Cultural: sustainability not a priority for all members of the organization (Mallen et al., 2010a)

Many of the participants in the Mallen et al. (2010a) study felt that financial and human resources needed to be specifically devoted to environmental issues in order to achieve improvement because commitment tended to decrease as the event planning progressed and resources became scarcer.

As an example of the sport management practitioner's involvement with environmental issues, the Virgin London Marathon produces a Sustainability Report that highlights objectives and strategies to reduce environmental impact, not only of the actual event but also the planning organization (Grainger, 2009). Importantly, this report, while only five pages in length, includes a list of specific procedures for both the actual event and the planning offices. Examples of these procedures include using compostable or biodegradable materials to serve food and drink, purchasing FairTrade goods when possible, encouraging the use of public transit, and utilizing colour-coded bins to aid recycling (Grainger, 2009). Practitioners have also been involved by forming

organizations that provide offsets, such as Greenfleet, which allow planners of both large and small events to reduce environmental impact (Laing & Frost, 2010). Events are increasingly offering participants the opportunity to pay an extra fee to offset their individual carbon emissions (Laing & Frost, 2010). Environmental issues, whether related to mega-events such as the Olympic Games or to smaller events such as the Virgin London Marathon, are increasingly on the radars of sport management academics and practitioners.

Sport facilities.

A Delphi study by Mallen, Adams, Stevens, and Thompson (2010b) found that “sport facility managers in the sample perceived that ES is slowly gaining credibility and priority at the North American sport facilities, but clearly lacks the financial investment to support quick and impactful advancements in ES initiatives” (p. 387). Mallen et al. (2010b) pointed out that environmental impact is highly contextual, thus necessitating industry or sub-industry specific knowledge about these issues.

Several certification programs exist that facilities can apply to participate in. The Leadership in Energy and Environmental Design “is a third party certification program designed by the United States Green Building Council in 1998 to emphasize ‘green’ building construction” (Mallen et al., 2010b, p. 369-370). Another example is the Global Reporting Initiative program which “sets standards on sustainability performance reports related to labour practices, including health and safety” (Mallen et al., 2010b, p. 369-370). The International Standard Organization administers the ISO 14001 voluntary certification program that provides environmental management system requirements but does not include specific environmental performance standards (Mallen et al., 2010b).

The program has been criticized due to the voluntary and company-specific reporting system and the level of bureaucracy involved (Mallen et al., 2010b). Mallen et al. (2010b) noted that many sport facilities found the cost and educational demands of the aforementioned certifications to be prohibitive.

Sport facility managers were also, perhaps unsurprisingly, found to heavily favour environmental objectives such as recycling and reduction of energy use that led to visible and easily quantified financial savings (Mallen et al., 2010b). Further, a content analysis of websites of *Fortune* Global 500 companies found that resource/waste management was the environmental concern highlighted most frequently (Kim, Nam, & Kang, 2010), again emphasizing the propensity of organizations to focus on environmental improvements that lead to easily quantified, tangible outcomes. This indicates that other beneficial environmental impact reductions are being ignored or underutilized. Mallen et al. (2010b) found that many facility managers expected to eventually move beyond engaging in only those environmental impact reductions that immediately aided the bottom line but viewed their current focus as a “good start.”

Individual sports.

While large-scale events have been the focus of much environmental impact research (Collins et al., 2009), individual sports can also have a significant impact. A study by Thompson, Hutson, and Davidson (2008) discussed how bouldering (a type of rock climbing) at the Niagara Glen Nature Reserve in Niagara Falls, Ontario had come under attack for the damage caused to fragile flora by hiking off the main trails. Skiing (discussed in more detail below) is often labeled as a sport with a relatively large impact and managers have experienced great difficulty in balancing the competing interest of the

various groups involved (Holden, 2000; Weiss, Norden, Hilscher, & Vanreusel, 1998). Interestingly, “[s]kiing—a sport whose very existence is in some places threatened by global warming— can produce substantial environmental impacts” (Schmidt, 2006, p. 291).

Golf is another sport that is frequently cited when discussing environmental impact due to the massive consumption of water and pesticides, the pronounced alteration of the natural landscape, and the impact on wildlife (Schmidt, 2006; Wheeler & Nauright, 2006). Estimates have placed a golf course’s chemical use at seven times that of large-scale agriculture (Wheeler & Nauright, 2006). In terms of water use, one organization found that the world’s golf courses utilize an amount of water equal to what would be required to support 4.7 billion people, *over four-fifths of the human population*, at the recommended daily minimum level (Wheeler & Nauright, 2006). Golf has come under scrutiny in many places, encouraging some golf course developers to begin targeting underdeveloped countries where environmental regulations are less prominent or not easily enforced (Wheeler & Nauright, 2006). Wheeler and Nauright (2006) stated that there have been some environmental improvements in recent years, but “chemical use, land degradation, water-use issues and more still plague golf in the developing world” (p. 429). Golf’s increasing popularity and the desire for idyllic courses has meant the sport’s environmental impact continues to grow despite efforts to improve sustainability (Wheeler & Nauright, 2006). Indeed, the IOC, “responding to concerns about the environmental impact of golf course construction and operation, decided not to include golf as a new Olympic sport” (Wheeler & Nauright, 2006, p. 438).

As has been shown in this section, sport causes significant environmental impacts. From facilities to large events to individual activities, consideration of the environmental implications of sport is now a topic of concern for policymakers and researchers (Roper, 2006). As Schmidt (2006) noted, “ironically, even as sports promote health, they can also degrade the environment upon which good health depends” (p. 287).

The state of environmentalism within sport.

This section of the literature review focuses on the role that sport management has played with respect to the environmental issues that accompany sports events. Academic literature in addition to tools and research produced by practitioners has been highlighted. Mallen et al. (2011), in their content analysis of the sport management literature, found that “only 17 of the 4,639 peer articles reviewed from the 21 sport-related journals directly addressed ES” (p. 245). The extremely low number (0.365%) of articles concerned with ES is disappointing as “[s]port is not immune to the contemporary responsibilities of protecting the natural environment” (Mallen et al., 2011, p. 240). Other fields, such as management, have journals dedicated to issues of ES; whereas the results of the study by Mallen et al. (2011) “indicated a lack of robust or comprehensive ES research within the sport-related literature” (p. 251).

In terms of the articles highlighted in this literature review that do deal with environmental issues in the context of sport, the following three themes emerged:

- Many studies focused on emission reduction
- Organizations often endeavoured to reduce impact but failed to meet their goals
- Sport is recognized as a powerful “marketing tool” for environmental issues

Mallen et al. (2010a) noted that “environmental information predominantly focuses on carbon emissions and fails to capture other key impact areas” (p. 99). Many events have begun offsetting their emissions, either fully or partially. While this is very likely a positive trend, other forms of impact reduction require attention as well. Obviously, exceptions to the overriding focus on emissions can be found. For example, Laing and Frost (2010) not only highlighted carbon emissions but also discussed many other elements of the environmental impact of events such as waste management and recycling. Collins et al. (2007) discussed a range of environmental impacts of the 2003/2004 FA Cup including the travel to and from the event, the consumption of food and drink, and the operation and maintenance of the infrastructure. Grainger (2009) highlighted procedures for reducing the impact of not only of the actual Virgin London Marathon but also of the planning offices by utilizing recycled paper, communicating with runners via email, and so forth.

Another theme seen in many of the articles considered in this literature review is a general level of effort but eventual inability to reach objectives due to communication issues and the many diverging organizations involved. The effort is a positive trend, but overcoming compartmentalization and resolving issues related to the global-local divide will be required if effort is to be transformed into achievement. Finally, Roper (2006) stated the following: “Sport is a vehicle for capturing the public’s attention, and therefore can be important for helping to change public attitudes” (p. 1). Fortunately, the truth of this statement seems to be increasingly recognized as many of the articles discussed not only examined impact reductions but also noted the potential increase in public awareness. Returning to the initial inquiry regarding the state of environmentalism within

sport, it seems that environmental issues are definitely on the radar but sport has failed to embed ES into its core identity.

Is sport unique?

To conceptualize the uniqueness (or lack thereof) of the sport-environment relationship, this manuscript will now consider how environmental issues have played out in the corporate sector. A study of United Kingdom companies completed in 1995 found that approximately 95% had formal, written environmental policies in place (Ghobadian, Viney, James, & Liu, 1995). Further, Ghobadian et al. (1995) reported that 88.5% of companies surveyed replied that “being seen to be environmentally responsible was an important element in their corporation’s identity” (p. 49). Further, in their content analysis of organizations and environment literature, Bansal and Gao (2006) said, “More than half (62%) of the articles in our sample studied environmental outcomes” (p. 465). Rather than treating the environment as a contextual variable, “[t]his category of research assumes that organizations affect the natural environment; thus, researchers must understand how these effects can be reduced to alleviate environmental harm” (Bansal & Gao, 2006, p. 465).

The motivation behind corporate environmental policy has likely often been reactive in terms of sidestepping impending legislation and responding to public concerns while remaining competitive (Ghobadian et al., 1995). Stubbs and Cocklin (2008) stated that a “sustainable organization expresses its purpose, vision and/or mission in terms of social, environmental, and economic outcomes – sustainable organizations must make a profit to exist but they don’t just exist to make a profit” (p. 121). This definition highlights and follows the triple bottom line approach (attention to social, environmental,

and economic concerns) and indicates that to be considered a “sustainable organization” these values need to be guiding concepts (Stubbs & Cocklin, 2008).

The cooperative nature of professional sport leagues and community sport may theoretically position sport to be proactive and exceed minimum requirements and expectations. However, as described above, the environment has yet to become a guiding concern in the sport management literature (Mallen et al., 2011). Further, when the environment is prioritized within sport the motivation seems to frequently be responding to public opinion (Roper, 2006) or immediate bottom-line savings (Mallen et al., 2010b). Essentially, rather than making use of a high public profile and cooperative league management, sport seems to mirror rather than surpass the level of environmental commitment seen in the corporate sector. The author of this manuscript argues that sport is a powerful *potential* vehicle for social change but currently approaches environmental issues reactively and with minimal commitment.

How the environment impacts sport.

In the above sections the environmental impacts of sport were outlined, and some of the steps sport management academics and practitioners have taken to reduce impact and raise awareness were discussed. However, the environment also significantly affects sport in a variety of interrelated and complex ways. The UNEP lists the following ways in which the environment may pose a threat to sport:

- Air pollution : May cause respiratory illness and difficulty in breathing
- Indoor air quality: Same as above
- Toxic chemicals: May cause severe physiological reactions
- Pesticides: Same as above

- Water pollution/bacteria: Same as above
- Noise pollution: May cause hearing difficulties and stress
- Cigarette smoke: Exposure to this will reduce the supply of oxygen to the body
- Ozone layer depletion: Will increase UV radiation exposure and skin problems including cancer
- Climate change: Unpredictable and extreme weather patterns may make it difficult to engage in sport
- Habitat/biodiversity loss: May lead to loss of natural areas to practice sport (UN, 2010, n.p.)

To demonstrate the intricacy of these issues consider that a study of golf courses in the Greater Toronto Area found that climate change is predicted to *increase* the number of golf rounds played by 5.5% to 13.5% in the 2020s (Scott & Jones, 2006). While overall rounds played may benefit from a warmer globe, water availability, pest control, and grass maintenance will become increasingly problematic as temperatures rise (Scott & Jones, 2006). Therefore, even if a sport will be positively affected by climate change, environmental issues remain prevalent concerns. Skiing is another sport that is significantly affected by environmental conditions (Burki et al., 2003; Moen & Fredman, 2007; Scott et al., 2002). Even artificial snowmaking does not fully shield skiers and ski resort managers from the impacts of climate change (Jong, 2002).

The social constructions of places.

Stokowski's (2000) notion of "place" as a socially constructed concept emphasizes "the possibility that places are always in the process of being created, always provisional and uncertain" (p. 374). For instance, Stoddart (2008) argued that "the

meaning of the skiing landscape is not a fixed thing” but rather “actively constructed by different actors” (p. 3). Following this line of reasoning, “place” can be seen as the meanings attached to a particular context rather than the physical setting. Thus, alterations in environmental conditions will have potentially powerful effects on the meanings humans attach to particular places. Will skiers enjoy the sport in the same way and to the same extent if the landscape is significantly altered by snowmaking (Jong, 2007)? Golfers may experience a longer season in the future, but how will they view the sport if the greens suffer due to lack of water (Scott & Jones, 2006)? Boulderers desire access to the Niagara Glen and view their level of impact as generally acceptable, but if the area continues to grow in popularity and vegetation becomes increasingly scant will “beautiful” remain a common descriptor of the setting as it was in the study by Thompson et al. (2008)? Will spectators and participants in large events continue to attach positive associations to the venue if environmental conditions significantly worsen, thus making the impacts of our sports more pronounced? In response to questions concerning the interplay between sports and the environment, this manuscript accepts the notion that sustainability in sport is not easily delineated or defined. Consideration of the variety of meanings attached to “sport” and to “the environment” amongst various individuals and groups is necessary alongside more qualitative measures of impact. In many ways this argument echoes Slack’s (1996) call for the expansion of the breadth of organizations under study and the inclusion of more qualitative research. As noted by Mallen and Chard (2011), the objective of engaging in a debate about the relationship between sport and ES is “not to find ‘one truth’ but to create options, conceptual possibilities and a generalized vision of Sport-ES” (p. 425).

Environmental Issues in the Context of Skiing

How skiing impacts the environment.

Interestingly, in responding to pressure to improve environmental performance the “ski industry initially reacted dismissively as they perceived themselves as a low-environmental-impact sector of the economy” (Steelman & Rivera, 2006, p. 519). This stance, however, would change after the arson attack on the Vail ski lodge in 1998, allegedly the response from a radical environmental group to Vail’s expansion plans (Steelman & Rivera, 2006). This act, which united environmental groups and increased public scrutiny, put skiing on the map as an activity that significantly impacts the environment (Steelman & Rivera, 2006). The National Ski Areas Association (NSAA) lists 11 categories of environmental issues within the context of skiing including (see Appendix C):

- Planning, design, and construction
- Operations; energy conservation and clean energy
- Waste management
- Fish and wildlife
- Forest and vegetative management
- Wetlands and riparian areas
- Air quality
- Visual quality
- Transportation
- Education and outreach (NSAA, 2005)

The following quote illustrates how all elements of the activity of skiing cause significant environmental impacts:

By jumping on planes to go to the Alps, we pump carbon dioxide straight into the stratosphere. Then, when we arrive, we burn even more fuel in heated lodges and by taking lifts to mountain peaks, before skiing on artificial snow, courtesy of energy intensive snowmaking machines. (Chesshyre, 2005, p. 70)

One of Chesshyre's (2005) interviewees pointed out that given the significant level of environmental degradation it is ironic that the skiing media depicts pristine mountain conditions. Paradoxically, our desire for optimal conditions in the short-term often relegates long-term conservation efforts to the back-burner. For example, in planning for the Nagano 1998 Winter Olympic Games "[i]nitial concerns for vegetation and wildlife were set aside to ensure a longer downhill ski course for athletes" (Thibault, 2009, p. 12). As a more extreme example, in some places where skiing is not naturally possible indoor skiing venues called "snow domes" have been developed which use massive amounts of energy to maintain cold temperatures within warm climates (Thibault, 2009). An example of this is Ski Dubai which is located in a climate where temperatures often reach 45°C (Orchard & Webb, 2005).

Snowmaking.

Artificial snowmaking, which has become increasingly important due to warmer temperatures, in many ways worsens the environmental impacts of skiing (Jong, 2007). Scott et al. (2002) demonstrated that in Southern Ontario, Canada heavy investment in snowmaking allows skiing to continue relatively unimpeded despite a warming world. However, snowmaking uses massive quantities of water. One study conducted in the Alps

found that 2.8 million litres of water per kilometer of piste (ski slope) were required (Hudson, 1996). Pumping water for snowmaking often results in mountain streams and lakes ending up either dry or diverted (Jong, 2007; Schmidt, 2006). These ecological alterations have cascade effects on species, and thus ecosystems, downstream (Schmidt, 2006). Another risk is pumping water from contaminated streams, thus introducing foreign acids and metals into fragile alpine environments (Schmidt, 2006). In addition, artificial snow melts at a slower rate than natural snow, thus potentially damaging grasses and flowers (Hudson, 1996). Aside from physical impacts, the global-local disjuncture and power dynamics caused by “contested natures” can be seen playing out in the discourses around these issues (Cantelon & Letters, 2000; Stokowski, 2002). For instance, a ski area in Arizona, USA wanted to use treated wastewater to make snow – a method that is environmentally preferable to using fragile mountain lakes and stream – but the local Navajo population was outraged by the prospect of spraying wastewater on “sacred” mountains (Schmidt, 2006).

Mallen and Chard (2011) discussed the Jevons paradox and an example of this is that coal is considered a “dirty” energy source so attempts are made to make it more efficient which, in turn, causes the cost of coal per unit of goods produced to decrease. Thus, coal becomes a more desirable energy source and the desired reductions in coal consumption may not be achieved. Artificial snowmaking may represent a similar dynamic. Snowmaking is currently seen as quite inefficient (Jong, 2007; Schmidt, 2006) so it seems likely that technological attempts will be made to improve its efficiency. However, snowmaking that requires less water and energy may only increase its appeal and, in the end, not result in lower resource consumption.

Alpine skiing.

Skiing, of course, does not have a uniform impact across locations and seasons. Alpine (high altitude) skiing has come under particularly vehement attack (Schiermeier, 2004). As one person quoted in Schiermeier (2004) said, “High-altitude skiing is a ruinous waste of energy and natural resources” (p. 235). As the climate warms skiing will shift to higher altitude locations, thus exacerbating this effect (Moen & Fredman, 2007). This situation is made worse because many alpine regions, such as the Alps in Europe, subsist largely on revenue from tourism (Burki et al. 2003; Hudson, 1996). Local economies, thus, have become reliant on ski tourism but now the sustainability of their primary source of income is in question (Hudson, 1996).

How the environment impacts skiing.

Many consider climate change to be the primary threat to the sustainability of tourism, including sport tourism, in the 21st century (Scott & Becken, 2010). This danger is especially germane in the context of skiing as “[w]eather is a particularly important presence within skiing, as the quality and quantity of snow profoundly shapes skiers’ embodied interactions with mountain environments” (Stoddart, 2008, p. 4). For example, the “Alps account for one quarter of the world’s total tourism revenue” (Hudson, 1996, p. 176). As such, some towns in the Alps “are culturally divorced from the farming communities in the valleys” (Hudson, 1996, p. 177) and now rely heavily on ski tourism. In Switzerland, it is estimated that only 63% of ski areas will remain “reliable” after an increase of two degrees Celsius (Moen & Fredman, 2007). Thus, in the Alps many local economies are heavily reliant on ski tourism which may well be unsustainable in its current form.

To use an example in another region, climate change has had a disastrous impact on ski areas in New Hampshire, USA (Hamilton et al., 2003). New Hampshire “is among the top five U.S. states in terms of the economic benefit from skiing as a percentage of the state’s economy” (Hamilton et al., 2003, p. 53). Warming temperatures, however, have meant that only those ski areas that could afford snowmaking were able stay in business (Hamilton et al., 2003). Many family-owned ski hills in New Hampshire, thus, have either gone out of business or been bought by larger resorts with better snowmaking technology (Hamilton et al., 2003). The environment not only affects *when*, *where*, and *how much* people ski, it also affects *who* manages the resorts. As Hamilton et al. (2003) state, “[E]nvironmental change creates winners and losers” (p. 70). Hamilton et al. (2003) also found a shift toward skiing in higher-altitude, fragile ecosystems as a result of warmer New Hampshire winters.

Of course, there are numerous other examples of the potentially immense impact climate change will have on skiing. Burki et al. (2003) noted that data from Australia indicates that even if the “best case” predictions are met some ski areas will start experiencing “questionable” or “not viable” seasons. Research on Ontario, Canada’s Lakelands region found that the ski season “was projected to reduce by 0-16% in the 2020s, 7-32% in the 2050s and 11-50% in the 2080s” (Burki et al., 2003, p. 5). As has been demonstrated in this section, the environment is a major determinant of the viability of skiing in various locations around the world. As noted by Stoddart (2008), “there is a tension between notions of skiing as ‘sustainable development’ and skiing as an environmental problem” – “an environmental ambiguity at the heart of the sport” (p. 5).

The attitudes and awareness of skiers.

Importantly, the label “skier” has multiple meanings. It seems plausible to state that a family of four enjoying their yearly skiing vacation may approach environmental issues differently than an elite skier who engages in the sport for a living. Brymer, Downey, and Gray (2009) stated that “the relationship between extreme sports and the natural world is usually portrayed as a desire by participants to conquer or battle against nature” (p. 195). However, Brymer et al. (2009) said the following:

Contrary to theoretical perspectives that construe extreme sports as an attempt to assert superiority over the natural world, interview participants and other first-hand accounts point to the experience as producing a sense of connection to the natural world and recognition of one’s own place, and scale, within it. (p. 202)

For instance, an extreme skier who participated in the Brymer et al. (2009) study was involved in global warming education campaigns due to her experiences in the mountains. Also, some of the interviewees argued that a deep level of connection to the natural world could only occur if a state of vulnerability is experienced, pointing to the possibility that recreational skiers may well view their natural surroundings through a significantly different lens (Brymer et al., 2009). The author of this manuscript could not find any insightful research comparing the differences in environmental attitudes across skiers along dimensions of commitment, skill, and risk-taking; but it is nonetheless important to be aware of the possibility that broad generalizations of “what skiers think” may be inaccurate.

Bord, O’Connor, and Fisher, (2000) defined attitudes as “sets of beliefs in particular outcomes connected with pursuing a given line of behavior and the relative

rewards and costs connected with those outcomes” (p. 207). This conceptualization of attitudes will be used herein; awareness will refer to the level of understanding of one’s environmental impact. Holden (2000) used a five-point Likert survey to investigate the attitudes and awareness of skiers at Cairngorm, Scotland. He found “that many skiers are either unaware of the damage that ski development can cause in mountain environments, or are in some form of denial of the negative impacts because of their wish to pursue the sport with a clean conscious” (Holden, 2000, p. 255). As Holden (2000) noted, behaviours will only change when skiers experience cognitive dissonance (an imbalance between knowledge and actions). Cognitive dissonance theory states that individuals will try to eliminate dissonance but some such strategies, such as excusing one’s actions as only constituting a small impact, will not result in reduced environmental impact (Holden, 2000). Hudson and Ritchie (2001) used a five-point Likert scale to compare the attitudes of American, Canadian, and British skiers. Like Holden (2000), they found a general lack of awareness and even significant factual errors by many participants; only 53% of respondents agreed that snowmaking required considerable quantities of water and energy (Hudson & Ritchie, 2001).

In addition to studying attitudes in order to better alter behaviours, such research proves useful for ascertaining the viability of technological innovations such as snowmaking (Pickering, Castley, & Burt, 2009). Pickering et al. (2009) found that skiers at a largest Australian resort were less likely to ski in years with low natural snow, which brings into question the viability of snowmaking as a technological adaptation to climate change. In addition to illuminating attitudes regarding snowmaking, research in this vein is useful in elucidating how willing skiers are to pay for a more environmentally-friendly

“product” (Hudson & Ritchie, 2001). Several studies have found that a significant number of tourists are willing to pay more in order to reduce the impact (Becken, 2007; Hudson & Ritchie, 2001; Weiss et al., 1998). Weiss (1998) found that 59% of skiers were willing to pay an environmental tax. Becken (2007) studied air travel, not skiing, but the results are still insightful as air travel was associated with freedom indicating that the idea of restrictions was unpopular but an environmental tax was seen as a potential “compromise.” Weiss et al. (1998) and Hudson and Ritchie (2001) have found a similar dynamic among skiers as they were generally unwilling to cease skiing but may consider paying more to visit environmentally-friendly resorts.

While not specifically studying the context of skiing, in research on environmentally-friendly tourism operators and the resulting “ecolabels” (certifications of environmental performance), Fairweather, Maslin, and Simmons (2005) stated that “it seems safe to conclude that some visitors are concerned about the environment in which they travel” (p. 85). However, “[c]oncern for the environment in which visitors travel does not necessarily translate into environmentally friendly behaviours” (Fairweather et al., 2005, p. 85). Fairweather et al. (2005) found that the disconnect between “concern among visitors for the environment in which they travel and lack of response to ecolabels” can likely be explained by the fact that “ecolabels are poorly promoted” (p. 94-95).

Factors that Encourage or Inhibit Proenvironmental Behaviour

A definition of proenvironmental behaviour.

In order to understand the potential effectiveness of ski resort environmental communications (SRECs) it is first necessary to define the behaviours that such

communications may aim to shape. Stern (2000) said, “Environmentally significant behavior can reasonably be defined by its impact: the extent to which it changes the availability of materials or energy from the environment or alters the structure and dynamics of ecosystems or the biosphere itself” (p. 408). Kollmuss and Agyeman (2002) defined proenvironmental behaviour as “behavior that consciously seeks to minimize the negative impact of one’s actions on the natural and built world” (p. 240). As noted by Stern (2000), behaviours may wield *direct* impact (i.e. clearing trees to make a ski slope) or *indirect* impact (i.e. failing to educate skiers regarding the effects of skiing off-piste). Pro-environmental behaviour might fall into any one of several categories including environmental activism (i.e. joining a demonstration), nonactivist behaviours in the public sphere (i.e. willingness to pay an environmental tax), private-sphere environmentalism (i.e. recycling), and other environmentally significant behaviours such as following appropriate industry regulations (Stern, 2000). Stern (2000) also drew a distinction between impact and intent and notes that investigation is warranted on both fronts.

In addition to defining proenvironmental behaviour, it is necessary to discuss measurement. Young’s (2000) distinction between outcome-based and context-based evaluations of proenvironmental behaviour is insightful. Outcome-based evaluations, which are concerned with the effectiveness of a method in isolation, can be further delineated by reliability (the effectiveness at achieving the environmental behaviour alteration) and durability (the degree to which the behaviour is maintained long-term) (Young, 2000). Measuring both reliability and durability is vital as some methods have proven to be very weak at achieving both, deeming the technique to be unsuccessful as a

long-term strategy (Young, 2000). Context-based evaluations often add a third measure, generalizability, which measures the degree to which the motivation can be applied in other contexts and situations (Young, 2000). Context-based approaches may also consider the depth of concern (the degree of conviction) and motive (the reason for acting). Importantly, Young (2000) stated that “research reported this past decade suggests the possibility that self-interest is a potential solution to environmental problems” (p. 514). Self-interest, often maligned as a *cause* of the problem rather than a solution to it, may be especially pertinent in a context such as skiing. Skiers do not necessarily need to be altruistic environmentalists in order to adopt proenvironmental behaviours; they need only to realize that the continued viability of their sport may depend on such behavioural changes.

Values, beliefs, norms and the role of knowledge.

Stern (2000) postulated the following: “Personal norms to take proenvironmental action are activated by beliefs that environmental conditions threaten things the individual values...and that the individual can act to reduce the threat” (p. 413).

Nordlund and Garvill (2002) said, “The personal norm, experienced as a moral obligation to act to protect whatever is threatened, is derived from the individual’s relevant general and environmental values” (p. 745). Empirical evidence has indicated that “personal moral norms are the main basis for individuals’ general predispositions to proenvironmental action” (Stern, 2000, p. 413).

While “the personal norm can be viewed as an important general predisposition to act in a proenvironmental manner” (Nordlund & Garvill, 2002, p. 751), studies have found somewhat diverging results regarding how personal norms are shaped. For

instance, O'Connor, Bord, and Fisher (1999), in their study of 1,225 adults in the U.S., found that "risk perceptions and knowledge increase people's willingness to take steps that address environmental problems" although "general environmental beliefs and demographic characteristics" (p. 470) were also important variables. O'Connor et al. (1999) defined risk perceptions in their study as "the perceived likelihood of negative consequences to oneself and society from one specific environmental phenomenon: global warming" (p. 462). Further, in Whitmarsh's (2009) mixed-methods study from southern England, a sense of moral obligation was found to be the strongest determinant of intended behaviour to reduce energy consumption while demographic and contextual factors were more important in determining actual impact reductions. Whitmarsh (2009) said that "this research did not find perceived risk or education influenced intent-oriented action" (p. 20), a result incongruous with the study by O'Connor et al. (1999). Whitmarsh's (2009) study focused on self-reported behaviour rather than a willingness to act, and differences in measures or cultural contexts may explain the disparity. In addition, Whitmarsh's (2009) study focused only on energy use.

A meta-analysis of psycho-social determinants of proenvironmental behaviour by Bamber and Moser (2007) found that:

Pro-environmental behaviour is probably best viewed as a mixture of self-interest (e.g., to pursue a strategy that minimises one's own health risk) and of concern for other people, the next generation, other species, or whole ecosystems (e.g., preventing air pollution that may cause risks for others' health and/or the global climate). (p. 15)

This meta-analysis also found evidence to support the indirect, although significant, influence of problem awareness and knowledge on proenvironmental behaviour (Bamber & Moser, 2007). Kollmuss and Agyeman's (2002) conclusions included that:

We see environmental knowledge, values, and attitudes, together with emotional involvement as making up a complex we call 'pro-environmental consciousness'.

This complex in turn is embedded in broader personal values and shaped by personality traits and other internal as well as external factors. (p. 256)

Kollmuss and Agyeman (2002) stated that knowledge and awareness do not directly lead to behaviour changes in most cases, but a certain level of knowledge and awareness is required in order to adopt proenvironmental behaviours *consciously* (i.e. not due to taxes or other such incentives).

Kollmuss and Agyeman's (2002, p. 257) model for proenvironmental behaviour is shown in Figure 1. In terms of shaping proenvironmental behaviours within the Kollmuss and Agyeman (2002) model, SRECs may be seen as playing a role in affecting both internal and external factors. For instance, an SREC may improve environmental consciousness by providing knowledge regarding the environmental impacts of skiing or inciting some level of "fear" regarding the unsustainability of current practices. The link between SRECs and external factors in Kollmuss and Agyeman's (2002) model is perhaps less clear. Note, however, that SRECs may contribute to shaping and "popularizing" social and cultural factors that may, in turn, affect proenvironmental behaviour. Further, while the link is indirect, consider that SRECs may shape the internal factors of ski resorts managers, thus eventually affecting the sustainability of ski resort infrastructure. For instance, perhaps an effective SREC encourages the ski resort

management to install recycling bins – the availability of recycling then becomes an external factor for skiers.

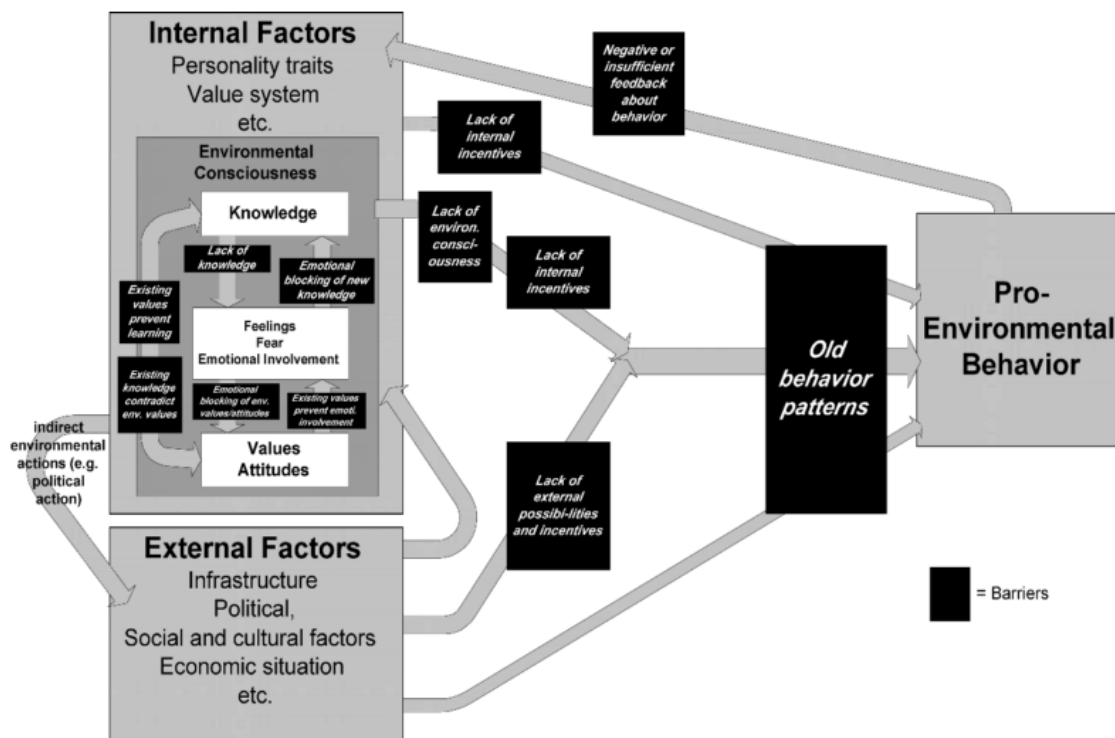


Figure 1. A model of pro-environmental behaviour (Kollmuss & Agyeman, 2002).

The preceding discussion underscores the complexity of delineating the determinants of proenvironmental behaviours. Young (2000) noted that proenvironmental behaviour is very likely instigated by multiple motives. While models may be valid in many circumstances, it is difficult to produce a uniform and transcendental explanation. As indicated by Nilsson, Von Borgstede, and Biel (2004), the unit of analysis is an important factor to consider. The literature highlighted in this section paints a nuanced picture with the determinants of proenvironmental behaviour potentially diverging along several lines. A theory designed to describe the proenvironmental behaviour of individuals may or may not hold for organizations or be valid for both public and private

organizations, cultural factors may render a theory only applicable to a certain segment of the population, and so forth.

Recommendations for shaping environmental behaviours.

Whitmarsh (2009) called for a somewhat holistic approach to tackling behaviour changes saying, “Ideally, informational, incentive-based, moral and structural approaches should be combined to foster long-term behaviour change” (p. 21). Stern (2000) also advocated a broad-based approach to behaviour change, stating that a combination of the four intervention types – appealing to religion or morality, increasing education or information, providing incentives, and establishing rules or expectations within the community – has been found to be most effective. These recommendations are also supported by Bamber and Moser’s (2007) finding that both self-interest and morality are important determining factors. As noted by Young (2000):

[I]t is clear that no single motive is optimal for promoting ERB [environmentally responsible behaviour]. No motive has universal appeal, works under all conditions or in all situations. No motive is likely to meet both short- and long-term goals. The widespread promotion of ERB will require an understanding of the great diversity of motives people find acceptable and empowering. (p. 523)

Further, Cornelissen, Pandelaere, Warlop, and Dewitte (2008) discussed the impact of “positive cueing” which entails “cueing commonly performed ecological behaviors as environmental” (p. 47). An individual may already be engaging in proenvironmental behaviours but not recognize them as such. Positive cueing entails encouraging the individual to realize that these behaviours (which are already being performed) are actually proenvironmental. Cornelissen et al. (2008) found that positive

cueing encourages people to adopt proenvironmental behaviours with greater frequency. Thus, framing SRECs in terms of “this is what you are already doing to protect the environment and here are some other things that would help” is potentially more effective than grim tales of the coming doomsday. This recommendation is highlighted by Dawson, Stewart, Lemelin, and Scott’s (2010) study on the carbon emissions caused by tourists attempting to view polar bears in Churchill, Canada. The polar bear viewing situation is similar to skiing in that an activity is taking place that is only possible in an environment that is partially threatened by that very activity. Dawson et al. (2010) found that some participants in the study adopted an attitude of “last chance tourism,” creating the potential for the increasing fragility of the environment to only spur on more tourism as people try to “see it before it’s gone.” Care must be taken, therefore, to not encourage this “last chance tourism” dynamic within skiing.

Research has found that for a new habit to evolve the behaviour must be frequently repeated, take place in stable surroundings, and lead to some form of reward (Jansson, Marell, & Nordlund, 2010). This suggests that frequent skiers (such as season pass holders) may need to be targeted differently than those who ski only occasionally. Jansson et al. (2010) found that “the consumer behaviors of resource curtailment and adoption of eco-innovations can both contribute in different ways towards achieving a more environmentally sound future” (p. 366). For instance, habits regarding recycling and energy use (resource curtailment) may be a higher priority for frequent skiers whose daily impact over the course of a season is significant. Vacationing skiers who are traveling to the ski area, on the other hand, may be encouraged to choose the more environmentally-friendly resort (eco-innovations).

The Role of Ski Resorts and Ski Resort Environmental Communications (SRECs)

SRECs likely do (or at least *could*) play some role in shaping proenvironmental behaviours. SRECs may be seen as reflections (with varying degrees of accuracy) of the environmental policies adopted by the ski resorts. However, this manuscript is primarily concerned with the environmental communications (published on the ski resorts' websites) rather than the policymaking process. For example, some ski resorts and ski clubs offer skiers and members the opportunity to pay a small additional fee that goes towards carbon-neutralizing efforts such as tree-planting or renewable energy programs while other resorts have been reluctant to put the financial burden directly on the customer and have attempted to reduce impact by improving the efficiency of the resort facilities (Chesshyre, 2005). The present study is focused on the ski resort's communication of whichever policy it chose to adopt rather than critiquing the actual policy alternatives. However, it seems logical to suggest that a link may exist between environmental policy and environmental communication. A brief discussion of environmental policy as it relates to ski resorts is, therefore, warranted.

As noted by Anguita, Alonso, and Martin (2008), "Environmental policy may be defined as a purposive course of action or inaction followed by an individual or group, mainly an organization, in dealing with a matter of concern regarding the environment" (p. 157). It seems that ski areas may well have the same natural tendency toward focusing primarily on short-term, cost-reducing environment projects that Mallen et al. (2010b) found among other sport facility managers. Indeed, both environmental communications and policies may be evaluated in terms of "a fundamental philosophical concern over the nature of business in relation to the environment" and the fact that there is often "a

mismatch or ‘gap’ between formal policy pronouncements and day-to-day organisational activity” (James, Ghobadian, Viney, & Liu, 1999, p. 338). Notably, the second concern, incongruence between policy and operations, was found by Paquette et al. (2011) in the dynamic between the IOC and the Organizing Committees for the Olympic Games. Thus, crafting effective SRECs is an important but not self-sufficient step in prompting reductions in environmental impact. Equally important is the implementation of policy and the transformation of broad guidelines into operational standards.

The model below (Figure 2), was taken from James et al. (1999) and is insightful as it highlights the various factors that may shape the decision-making (and ultimately policy formulation and implementation) process. SRECs, therefore, may be seen as existing in a complex domain – a space that is shaped by various external regulations and social expectations, internal cultural dynamics and ethical standards, and financial and technological variables. Howard-Greenville (2006) advocated conceptualizing an organization as a “black box” in the sense that “an organization’s culture, subculture, and the relations between them may be central to understanding which issues the organization responds to and how it responds” (p. 47). Howard-Greenville’s (2006) emphasis on considering organizational culture is reflected in James’ et al. (1999) model as seen in the mediating factors. External and moderating factors alone may often be insufficient in fully understanding the environmental strategies (or lack thereof) adopted by organizations.

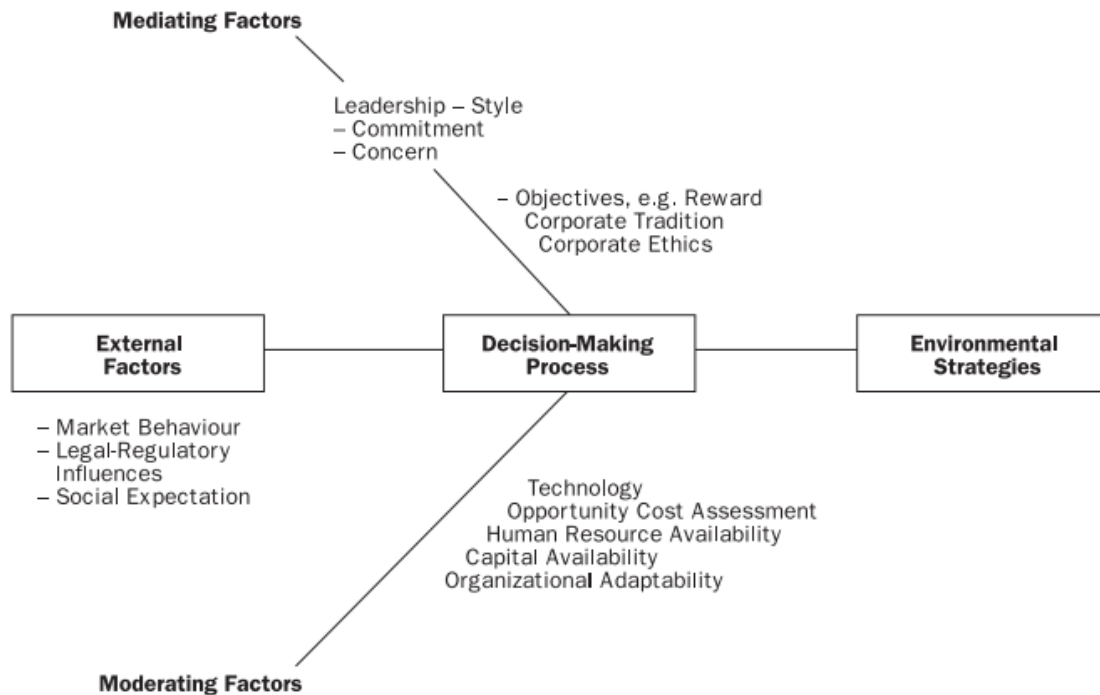


Figure 2. Interaction of internal, external, and moderating factors (James et al., 1999).

In James' et al. (1999) study of large UK companies, meeting legal requirements and avoiding prosecution were found to be the primary external motivators. Interestingly, respondents typically stated they were confident that legal requirements were being met but “seemed to believe that they will have only modest success at meeting social pressures” (James et al., 1999, p. 342). This result indicates a disparity (real or perceived) between legal and social pressures regarding environmental issues (James et al., 1999). As stated by James et al. (1999): “Environmental policy would seem very much to follow a top-down progression” (p. 343). James et al. (1999) found that senior management leadership and preferred corporate image were the primary internal mediating factors. In terms of environmental accreditations, many of the companies responded that they preferred to operate their own internal systems rather than seek external verification (James et al., 1999). James et al. (1999) found that the issues of congruence between

policy and implementation are most likely found in internal moderating factors. The only moderating factor deemed consistent across sectors was operating costs (James et al., 1999). Notably, “strategic considerations are assuming more importance than questions of resources” – leading to a situation where “policy decisions are being signed off without due consideration for the ability of the organisation to support these policies” (p. 345). James et al. (1999) suggested that to reduce the gap between policy formulation and implementation there is “a very real need within many organisations to establish mechanisms within the environmental strategy formulation process that will allow for their strategic capability to be more clearly understood before a policy is defined” (p. 345).

If ski areas wish to move beyond important but somewhat basic projects (e.g. installing energy-efficient light bulbs) to reduce environmental impact “across the board” skiers will likely have to bear the financial burden (Hudson, 1996). However, an article about the environmental director of Aspen Skiing, which runs a complex of upscale ski runs and hotels, noted the difficulty he experienced in gaining support for even basic projects like installing high-efficiency light bulbs (Elgin, 2007). Howard-Greenville’s (2006) notion of subcultures is insightful in explaining the difficulty experienced by the environmental director of Aspen Skiing as “subcultural groups are not equally powerful, with some enjoying status that flows from centrality in the work of the organization, or irreplaceability of their expertise or skills” (Howard-Greenville, 2006, p. 51).

Environmental objectives that are “tacked on” but not incorporated into the organization’s core mission will be at risk of their relative non-centrality hindering progress.

Further, it is necessary to consider the potential unexpected consequences of environmental policies. For instance, Hudson's (1996) case study of a ski resort at Verbier, Switzerland noted that skiers will likely have to pay a premium for more environmentally-friendly resorts, thus potentially altering the customer base. Changing environmental conditions, therefore, may transform skiing into a sport only accessible to the rich. Hamilton et al. (2003) noted that this has already happened in New Hampshire as small, nearby resorts closed down, leaving only larger resorts at higher altitudes that cost more to ski at and to get to.

The continued financial success of ski resorts in the long-term hinges on skiing remaining environmentally sustainable. Ski resorts, however, also stand to gain more immediate benefits from operating in an environmentally sustainable manner. For instance, corporate social responsibility (CSR) is becoming an increasingly important factor amongst consumers (Babiak & Wolfe, 2006; Du, Bhattacharya, & Sen, 2007). Du et al. (2007) stated that the idea that "CSR initiatives, particularly when part of a brand's positioning, have the potential to transform consumers into long-term advocates of the brand has important implications for relationship marketing" (p. 237). Taylor's (2010) assertion that all points of contact between an organization and the customer affect brand equity further emphasizes the importance of evaluating how environmental policies are formulated. Hudson and Miller (2005) argued that companies can use "cause-related marketing" to both improve society and associate themselves with positive initiatives that will improve their image. However, care needs to be taken to avoid a short-sighted, opportunistic approach. Incorporating the cause into foundational aspects of the organization (such as the business plan and operations) is therefore potentially beneficial

(Hudson & Miller, 2005). Hudson (1996) argued for this sort of “marketing” approach to ES when he claimed that going green will appeal to more affluent customers who are interested in such issues, improve reputation, and give potential investors a positive impression.

Fenton (2010) discussed the potential of using sponsorship to increase environmental awareness. While ski resorts may not have sponsorship agreements in the traditional sense, they may well team up with other organizations or promoters. Ski areas may be able align themselves with organizations that are seen as environmentally-friendly, thus improving the public’s impression of them. Sharma, Iyer, Mehrotra, and Krishnan (2010) discussed how environmental policies can have a “cascade effect” as partnering organizations are held to a higher standard. As noted by Raghubir, Roberts, Lemon, and Winer (2010), policies can have positive consequences that may be intended or unintended. Thus, the benefits of ski areas adopting environmentally-friendly practices may reach far beyond the physical impact reduction. Partnering organizations (equipment suppliers, for example), employees, and skiers may all be positively affected. A study by Hong, Yang, and Rim (2010) found that “when customers perceive a company to be socially responsible they are more likely to engage in dialogic communications with that company” (p. 197). Congruence between the brand (the ski area) and the customer (the skier) therefore becomes an important consideration when adopting this notion of SRECs as marketing tools (O’Connor & Meister, 2008; Quester, 2006; Zdravkovic, Magnusson & Stanley, 2010). SRECs may play an important role as the environmental component of CSR has in some cases not been adequately communicated to consumers (Lee & Shin, 2010).

Winter (2000) discussed four theoretical perspectives, derived from psychology, which may be relevant for providing insight into how environmental communications may shape behaviours. The four perspectives are as follows (Winter, 2000):

- Neoanalytic: environmental problems only solvable after people fully experience and internalize *feelings* (such as anxiety and fear) stemming from the issues
- Behavioural: both stimuli that precede and stimuli that follow actions important for shaping behaviours
- Social Psychological: power of social diffusion and group dynamics, challenge of transforming general public concern into proenvironmental behaviours
- Cognitive: importance of information and how it is communicated, focus on perceptions and thoughts

To illustrate how SRECs may be targeted via the above four theoretical perspectives consider, for instance, how an optional environmental tax could be portrayed. In the neanalytic approach the possibility of climate change making skiing unviable may be focused on and the tax presented as a way to avoid that rather dire fate. A behavioural approach might instead highlight the good feeling that will result from paying the tax or offer a small discount at the equipment rental shop for those who pay the tax. The social psychological perspective would likely emphasize that a large number of other skiers are already paying the optional tax. A cognitive approach may focus on providing a convincing and accurate description of what the tax is used for and how it may help reduce impact.

Fitzmaurice (2005) developed a model for how consumers adopt new behaviours. The steps that consumers proceed through in the model are as follows: can envision doing, considering doing, willing to do, and have taken steps toward (Fitzmaurice, 2005). Note that SRECs may be aimed at initiating or bolstering any of the steps in this model (or multiple steps simultaneously). Community-based social marketing has been found to be effective in positively shaping behaviours via the following process: selecting the activity to promote, identifying barriers, developing strategies to overcome the barriers, piloting the program when possible, and completing post-implementation evaluations (McKenzie-Mohr, 2000). Identifying barriers to behaviour change (which may be internal to the individual or external) is a crucial step that has often been overlooked by policy makers (McKenzie-Mohr, 2000). McKenzie-Mohr (2000) provided two examples of tools that can be utilized when designing programs: “commitment” which entails initially getting the individual to agree to a small change thus paving the way for larger changes in the future and “prompts” which are visual or auditory aids that remind people of impact reduction behaviours that might otherwise be forgotten. Of course, many other tools exist and these two focus only on internal barriers. The thrust of the argument is that barriers to behaviour change need to be taken into account when designing SRECs.

Regardless of the specific approach taken, Beckon (2007) purports that “what people know about climate change is strongly influenced by its representation and the discourse that surrounds it” (p. 352). In this study a successful SREC is envisioned as one that effectively and accurately presents the actual proenvironmental actions a ski resort is engaging in. Such a SREC may play a role in encouraging the adoption of proenvironmental behaviours as delineated by Kollmuss and Agyeman’s (2002) model

via the psychological approaches described by Winter (2000). This conceptualization of an effective SREC, theoretically grounded, is an attempt to bridge the academic-practitioner gap which is important as “individuals who design environmental programs frequently have professional backgrounds that ill prepare them for the challenges faced in designing behaviour-change programs” (McKenzie-Mohr, 2000, p. 531). To date, the result of policy writers lacking a theoretical background has been programs focused primarily on knowledge/information which, as discussed above, is likely not the ideal method to alter behaviours (McKenzie-Mohr, 2000). Due to the lack of skiers’ knowledge and awareness of environmental impact that previous studies have found it is indeed possible that knowledge-focused programs will have a larger impact in the context of skiing than in other settings where public knowledge is much greater. However, even if this is the case, SRECs containing an informational component *and* the psychological elements discussed above will likely be far more successful both in shaping behaviours and being effective marketing tools. As McKenzie-Mohr (2000) said, “To build an effective program, it is important to identify all of the barriers to a desired activity and then to design a program to systematically remove the most important of these” (p. 532).

The Sustainable Slopes Program (SSP).

The SSP was established in the year 2000 and is administered by the National Ski Areas Association (NSAA) in partnership with the U.S. EPA, the U.S. Forest Service, and other agencies (George, 2004; Rivera & de Leon, 2004; Rivera, de Leon, & Koerber, 2006). The SSP “aims to promote ‘beyond compliance’ principles that cover 21 general areas of environmental management” (Rivera & de Leon, 2004, p. 419). The voluntary report has ski resorts self-assess the following four areas on an annual basis:

1. A checklist of ‘Options for Getting There’, which consists of 177 environmental best practices across all 21 principles that ski areas can take either all or in part as their resources allow, to continually improve their operations.
2. Overall Implementation Status.
3. Priorities for Improvement.
4. ‘Principles in Action’, or steps taken to implement the Principles. (George, 2004, p. 60)

Figure 3 depicts the number of SSP members in each year as compared to how many self-assessment reports were filed. The 2009 annual report focused on grant programs so data were not available for that year. As demonstrated by the Figure 3, the voluntary nature of the annual self-assessment has meant that the range for response rates has been 29% to 52%, with an overall trend towards a declining response rate.

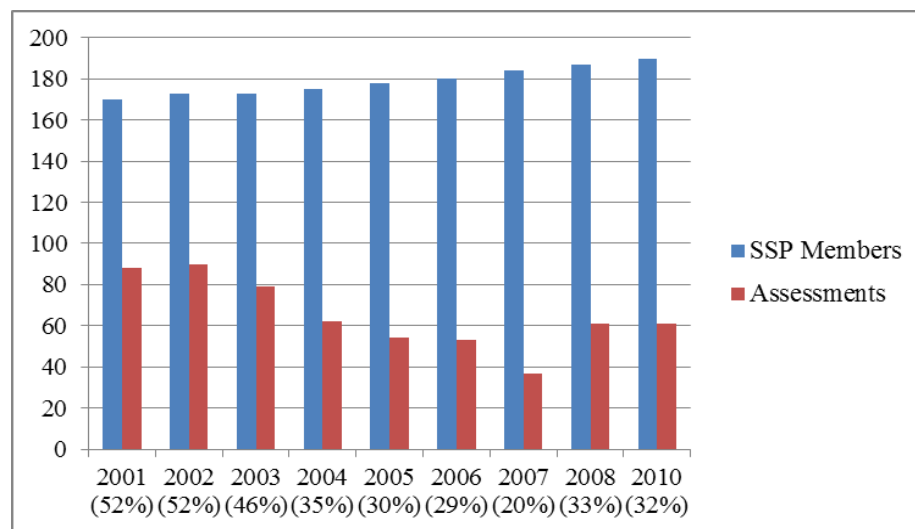


Figure 3. Proportion of SSP members that filed annual assessments (NSAA, 2010).

Many environmental groups have criticized the SSP for not providing adequate incentives (George, 2004). Notably, Rivera and de Leon (2004) and Rivera et al. (2006) found that SSP adoption was *not* correlated with better overall environmental

performance. This fact has led environmental groups to criticize ski areas of “greenwashing” (Rivera & de Leon, 2004). Many conservation groups have condemned the SSP for being “nothing more than a ‘publicity ploy’” (George, 2004, p. 62). One of George’s (2004) interviewees stated the following: “the Charter missed the big picture by completely ignoring all the issues of development and expansions with logging, wetlands fill, wildlife habitat destruction coupled with rampant real estate growth at many ski resorts is the biggest issue facing the ski industry today” (p. 62). Interestingly, the dynamic seen here is similar to the one found by Paquette et al. (2011) in their study of the IOC and the Organizing Committees for the Olympic Games, with the gap between broad (but not stringently enforced) guidelines and daily operations hindering improved environmental performance.

Steelman and Rivera (2006) suggested three tests to determine if a voluntary environmental program was serving the common interest: procedural (does it utilize an inclusive process, encourage responsible participation, and build accountability), substantive (are all valid and appropriate concerns considered), and practical (does the policy work for those involved). Steelman and Rivera (2006) applied these three tests to the SSP. In terms of the procedural test, while various individuals and groups were initially included in the design process of the SSP, some have argued that the NSAA was simply trying to “gain symbolic legitimacy for the program without incorporating the suggestions and inputs provided by environmentalists and local communities” (Steelman & Rivera, 2006, p. 518). Further, the SSP suffers from a “lack of mechanisms that could guarantee accountability and responsiveness” (Steelman & Rivera, 2006, p. 518). Due to these concerns the SSP fails Steelman and Rivera’s (2006) procedural test. With regard to

the substantive test, Steelman and Rivera (2006) argued that there is a conflict of interest resulting from the vast majority (over 90%) of ski resorts in the western U.S. that are on national forest land. As these ski resorts must pay a percentage of their revenue to the Forest Service, a situation is created “whereby government is complicit in helping industry achieve its goals of appearing more proactively environmental without making substantive change that are consistent with broader community goals, including superior environmental performance” (Steelman & Rivera, 2006, p. 520). In terms of the practical test, the SSP certainly helps the ski industry respond to pressure over environmental issues but fails to effect superior environmental performance (Steelman & Rivera, 2006). These poor results are, of course, not particular to the SSP. Other voluntary environmental programs, such as the U.S. government’s Climate Challenge and Climate Leaders programs, have also been criticized for allowing companies to free ride “on the reputation of responsible business while cloaking themselves in the appearance of action” (Steelman & Rivera, 2006, p. 506).

Research indicates that organizations adopt voluntary environmental programs in order to respond to consumers and investors with “green sentiments” and/or to respond to institutional and regulatory pressures (Moon & de Leon, 2007; Rivera & de Leon, 2004). The first reason is driven by the desire to acquire a competitive advantage. The impetus for the second reason, on the other hand, is pressure from within and above. The organization desires to not only reach economic objectives but also attain social legitimacy (Moon & de Leon, 2007). Moon and de Leon (2007) studied the EPA’s Green Lights Program – a voluntary environmental program that seeks to reduce greenhouse gas emissions via the installation of energy efficient lighting. Their results supported the

hypothesis that a “firm in an industry with a poor environmental track record is likely to participate in the Green Lights program” (Moon and de Leon, 2007, p. 486). Moon and de Leon (2007) also found that “a firm with a close relation to the final consumers is more likely to participate in the GL [Green Lights] program” (p. 491). Further, larger firms were found to be more likely to participate in the Green Lights program (Moon & de Leon, 2007).

Moon and de Leon’s (2007) results, while not derived specifically from ski resorts, provide insight into the popularity of the SSP. The skiing industry has a poor environmental track record (Holden, 2000; Weiss et al., 1998). Additionally, ski resorts operate in direct contact with skiers. Indeed, given Moon and de Leon’s (2007) findings, environmental initiatives are more likely to come from ski resorts than organizations further detached from skiers (such as equipment suppliers). The Ski Area Citizens’ Coalition focuses on the larger ski resorts in the western United States – of these 82 resorts 74 also endorse the SSP. River & de Leon (2004) noted that larger resorts garner higher visibility, frequently have a more sizeable environmental impact, and also likely face stronger institutional pressures.

The Ski Area Citizens’ Coalition (SACC).

The SACC, formed in 2001, independently assess 82 ski resorts in the western U.S. on an annual basis. The annual Report Card (see Appendix B) is described as:

a non-industry, independent mechanism that gives all outdoor and mountain recreational users a way to assess the environmental performance and policies of their favorite ski areas and resorts. By making eco-friendly business choices, you can encourage the improvement of environmental business policies and practices.

The Ski Area Report Card will help to provide ski areas a standard on which to improve. (SACC, 2010, n.p.)

While ski resorts endorsing the SSP program have often been accused of “greenwashing,” the SACC report cards have been criticized for being overly stringent, especially in terms of ski area expansion automatically leading to a lower score (Rivera & de Leon, 2004; Rivera et al., 2006). These critiques are perhaps unsurprising as the SSP annual reports are self-assessed while the SACC Report Cards are an independent, external evaluation from a group with an explicitly proenvironmental stance. Klenosky, Gengler, and Mulvey (1993) reported that the primary “cluster” of motivations for skiers deciding where to ski included such factors as the difficulty and variety of the terrain, indicating that ski resorts wishing to limit expansion may well be placing themselves at a competitive disadvantage. The 82 resorts (see Appendix A) are graded in four categories: habitat protection, protecting watersheds, addressing global climate change, and environmental policies and practices (SACC, 2010). The SACC has stated that “development on undisturbed forest lands is the single most damaging ecological impact a ski area can undertake” (SACC, 2010, n.p.). The Report Card methodology reflects this stance – habitat protection constitutes approximately 45% of the SACC’s grade.

Manring (2007) posed several “diagnostic questions” to help understand the dynamics within and between stakeholders in interorganizational networks that are involved in ecosystem management. Many of these questions are particularly insightful in understanding the relationship between the NSAA, the SACC, and the ski areas. Manring (2007) asked, “Does the network have a unifying purpose in creating a sustainable ecosystem based on the value and goal of consensus building through collaboration?” (p.

341). As noted previously, the SACC's notion of "sustainable" essentially does not allow for the building of new facilities and slopes whereas the NSAA's stance on development is not so strident. Further complicating the issue, ski resorts operate locally and delineations of sustainability are often far from harmonious. Consider, for example, the Navajo being outraged at the prospect of treated wastewater being used for snowmaking, a technological adaptation that many other stakeholders saw as a positive contribution to sustainability (Schmidt, 2006).

Manring (2007) asked: "What is the nature of the voluntary links and relationships between independent yet interdependent network members" – "is a spiral of trust evolving within the network?" (p. 341-342). Unfortunately, the NSAA and the SACC are known for criticizing one another rather than working together to reach environmental goals (Rivera & de Leon, 2004; Rivera et al., 2006). Further, whereas ski resorts voluntarily adopt the SSP, better environmental performance is not correlated with endorsement of the program, casting doubt on the sincerity of the efforts (Rivera & de Leon, 2004; Rivera et al., 2006). The "voluntary link" between ski areas and the NSAA, therefore, is not necessarily one that fosters ES. Manring (2007) also questioned the ability of the network to build consensus and collaborative decision making. It certainly appears that the network comprised of the NSAA, the SACC, and the ski resorts is not functioning at its full potential in terms of advancing a relatively harmonious mission statement of ES and the requisite procedures for reaching those objectives.

Theoretical Perspectives Regarding the Human-Environment Interaction

The preceding review of literature has endeavoured to build the argument that sport has a sizeable environmental impact, methods exist to reduce that impact, and

attempts to improve environmental performance can be utilized to shape behaviours and generate marketing benefits. Sustainability, therefore, has herein been assumed to be an end desirable for several reasons including the continued viability of the sport in question, the potential to incite the cascade effects of shaping the behaviours of customers and business partners, and the possibility of generating marketing benefits from “going green.” This operationalization of sustainability begs the question: How do we demarcate a sustainable human-environment interaction? One answer concerning the setting of boundaries involves the definition constructed by the IOC and the UN that was discussed near the beginning of this literature review. Similar to the perspective offered by the IOC and the UN, ecological modernization theory argues that economic growth need not necessarily entail environmental degradation (Stubbs & Cocklin, 2008). Organizations adopting a stance of ecological modernization “focus on being profitable as well as on improving the welfare of their stakeholders and minimizing environmental impact” (Stubbs & Cocklin, 2008, p. 106). Under ecological modernization theory the focus is on the organization as a whole having a neutral impact on the environment by “offsetting harmful activity in one area with compensating activities in another area” (Stubbs & Cocklin, 2008, p. 106).

However, this anthropocentric, “materialistic” conceptualization is far from universally accepted. Sahlins (1995), an anthropologist who studied “primitive” hunter-gatherer societies, argued the following:

Hunter-gatherers consume less energy per capita per year than any other group of human beings. Yet when you come to examine it, the original affluent society was none other than the hunter's—in which all the people's material wants were easily

satisfied. To accept that hunters are affluent is therefore to recognise that the present human condition of man slaving to bridge the gap between his unlimited wants and his insufficient means is a tragedy of modern times. (p. 1)

For Sahlins, sustainability entails an extreme redefinition of affluence and a radical “back to our roots” view of the optimal organization of society. Sahlins’ argument attacks the very foundation of the typical modern perspective of development as improving living conditions via technological innovation and the advancement of knowledge. Stated differently, Labonte (2004) asked to consider “how a disgruntled environmentalist once lamented the concept of sustainable development: ‘*they* got the noun, which defines, while we got the *adjective*, which merely modifies’” (p. 117).

Sahlins (1995) still prioritizes humans, but other scholars go even further and adopt a biocentric stance which argues that humanity’s interests should not supersede those of the other species. As noted by Anguita et al. (2008):

Defenders of the anthropocentrism paradigm have highlighted the centrality of man in all his actions while the supporters of biocentrism have reaffirmed the intrinsic value of all things on earth. In the extreme versions of both ideologies, anthropocentrism considers man as the only important thing in the world, and as a result all other things are of instrumental value, while biocentrism has made the human species equal to all others, denying the value of human individuality. (p. 160)

Anguita et al. (2008) posed two questions “Why conserve the ecosystem?” and “What is man’s function on earth?” (p. 160). The first question cannot be answered from an anthropocentric perspective and the second cannot be responded to from a biocentric

viewpoint (Anguita et al., 2008). Anguita et al. (2008), therefore, suggest a new model that moves beyond the anthropocentric-biocentric dichotomy. The model (Figure 4) emphasizes the necessity of considering environmental issues on various levels, or “spheres.” While Anguita et al. (2008) do not suggest that *all* environmental issues need to be considered on every level within their model, they do argue that our understanding and effectiveness would be improved by learning to think about environmental issues within all of the spheres in their model.

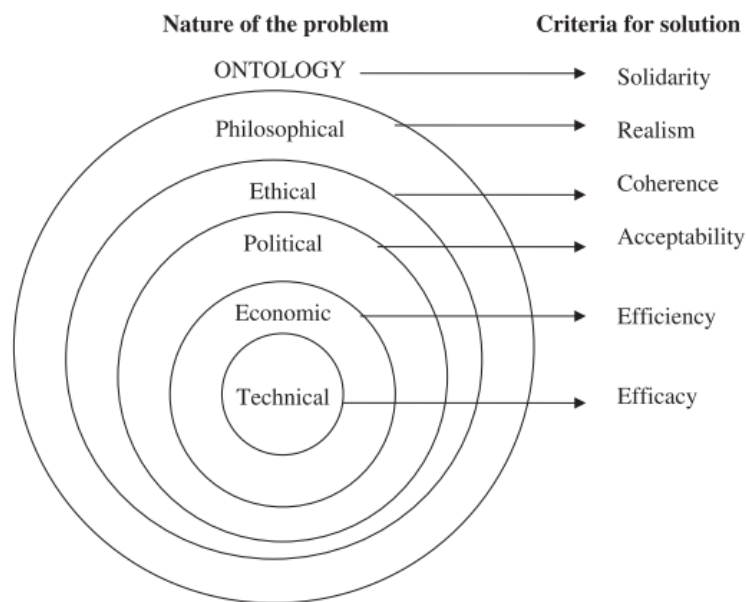


Figure 4. Concentric spheres decision-making model (Anguita et al., 2008).

Anguita et al. (2008) summarized three possibilities for the source of environmental conflict as follows:

- **Misunderstanding:** Everyone is concerned with the environment and the vast majority of basic human interests can coexist with ES, but conflicts arise due to miscommunication or misunderstanding

- Conflict Interests: Aims of governments, individuals, and environmentalists inevitably conflict, necessitating compromise.
- Basic Principles: Diverging values, principles, and world views lead to conflicts; compromise is unacceptable and decisions must therefore be made between incompatible principles.

Misunderstanding is best cured with dialogue and education, and Conflict Interests is best ameliorated with negotiation between relevant parties (Anguita et al., 2008). The Basic Principles necessitate people opt for environmental values over other, mutually-exclusive values in order to resolve environmental conflicts in a proenvironmental manner (Anguita et al., 2008). Overall, there seems to be little consensus both regarding how humanity should interact with the environment and the sources of conflict between humans and the environment.

Notably, the human-environment interaction debate is somewhat mirrored in sport. Scholars such as Boucher (1998) and Ziegler (2007) have been critical of the big-business, high-performance focus that they argue has become dominant in sport management. This “back-to-our-roots” perspective where community and amateur sport is reprioritized is, depending on your interpretation, either critical of the notion that maximum development within “the limits” should be the objective or a major redefinition of the term “development.” Others, such as Hums (2010), hail sport as a potential vehicle for affecting social change. Hums’ perspective seems to advocate continued development but with keen attention to various social and environmental issues. On the other hand, Slack (1996) argued that sport management has failed to keep up with global development; he calls for more research on sport equipment manufacturers, sport

marketing companies, entrepreneurial sport organizations, and so on. As within the environmental literature, in sport management there seems to be a degree of uncertainty as to what level or what type of development should be sought. There exists a notion of limited resources, thus necessitating that to focus on big-business and elite athletes entails a reduction of attention to community and amateur sport (and vice-versa).

While the author of this manuscript certainly does not possess the solutions to the human-environment, human-sport, or sport-environment debates, I will identify my perspective. Consideration of these issues strongly highlights the insight provided by taking a stance of social constructionism. For instance, Walker (2005) stated that “the notion of the environment as specific localities needs to be offset by a notion of the environment as a constellation of component elements: gravity, light, the physical and chemical properties of matter, aspects of climate, etc.” (p. 83). In this conceptualization humans may modify the environment, but the “natural environment then remains the underlying reality, albeit maybe at one remove or in piecemeal terms” (Walker, 2005, p. 83). The term “natural” might often be operationalized as if there were some concrete, inexorable definition attached to it but, rather, social constructions of the term vary widely. From one perspective it is unnatural for humans to, for example, engage in industrialized agriculture in the sense that for the vast majority of human history sustenance was provided by hunting, gathering, and the farming of small plots. However, in another sense it is difficult to imagine other animals not also eventually mass producing food if they gained the ability and tools to do so. If apes evolved to the point where they could engage in large-scale agriculture why would they turn down the opportunity? Is it not more “natural” for an animal to want a reliable source of calories

that requires minimal energy to maintain and collect? Nature prioritizes evolutionary development and protection of oneself and one's gene pool. Thus, paradoxically, arguments for "returning to our evolutionary roots" unavoidably separate humans from the natural environment in that we are viewing ourselves as somehow above nature and thus able to break the cycle of evolutionary development. Strangely, the desire to abandon modernity and re-enmesh ourselves in nature is in reality anthropocentrically driven and, far from uniting humans with nature, entails the quite unnatural requirement of reversing or halting evolutionary development.

Chapter Three: Methods

Understanding the role of SRECs is seen as a necessary step in furthering the sport-ES debate within the skiing industry. As noted by Mallen and Chard (2011):

Each sector in the sport academy can vary the response to sport-ES; thus, research recommendations are extended to study ES in each of the multiple sectors within the sport industry. This includes research on the particular paradoxes, uncertainties and trade-offs in sport-ES and sport environmental citizenship for each sector of the industry. Further research is necessary to guide actions for the way forward. (p. 431)

An environmental issue might be seen as containing three interrelated elements: the physical impact, the attitudes to and awareness of the impact (by participants, conservation groups, sport managers, the media, and so forth), and how the impact is socially constructed. SRECs have the potential to delineate the environmental impacts of skiing, affect the attitudes and awareness of relevant stakeholders, and shape social constructions regarding environmental issues. An analysis of SRECs is, therefore, presented. Figure 5, presented below, provides an overview of this study.

Purpose Statement: to content analyze the SRECs to determine how environmental issues are socially constructed within them and to compare those social constructions to the actual proenvironmental actions taken by the ski resorts.

Research Question	Data Collection	Data Analysis
<i>RQ: How are environmental issues socially constructed within the environmental communications of the ski resorts that are graded by the Ski Area Citizens' Coalition, and according to an adaptation of Hudson and Miller's (2005) model (see Figure 8) would these resorts be classified as inactive, exploitive, reactive, or proactive?</i>	The sample is constituted by n=82 ski resorts. Sixty of these have SRECs which are defined as environmental communications published on the ski resorts' websites, typically under a link such as "Environment."	The degree of environmentally responsible action is measured by the SACC Report Cards. The environmental communications are graded according to their prominence on the website and the breadth and depth of environmental issues covered.

Figure 5. An overview of the research methods.

Research Orientation and Approach

As noted by Kurz, Donaghue, Rapley, and Walker (2005) along with Winter (2000), environmental problems are largely created and maintained by people so social psychology is an important perspective to consider. Patton (2002, p. 97) conceptualized *constructivism* as being focused on the individual's experiences and *constructionism* as emphasizing cultural dynamics; this distinction will be used in this manuscript. Environmental issues herein are viewed from an epistemological approach of social constructionism. As defined in Kurz et al. (2005), social constructionism is the view that no clearly delineated meaning or definition of terms such as "sustainability" or "environmental impact" exists. Critics of this approach have argued that "social constructionists do not acknowledge the 'reality' and independent existence of nature, the environment, or environmental problems" (Burningham & Cooper, 1999, p. 299). As

Burningham and Cooper (1999) convincingly argued, these criticisms have incorrectly been levied on social constructionism in general when in fact they concern only more extreme versions of constructionism. Murphy (2004) said, “The extreme social constructionist pole of analysis – ontological constructionism – postulates that there is no way of separating the world from our interpretation of it, hence accounts constitute reality” (p. 250). Describing mild constructionism, Murphy (2004) noted, it “admits that reality cannot be reduced to a social construction and that social action occurs in the context of nature's dynamics, but it chooses for strategic reasons to bracket the latter and only investigates how discourse and practices are socially constructed” (p. 250).

Of interest here is “mild or contextual” social constructionism which draws “attention to the social processes that are involved in the development of scientific institutions, epistemologies, and knowledges” (Burningham & Cooper, 1999, p. 303). However, as environmental impacts are assumed to possess an independent existence, this approach might be more accurately conceptualized as “realist constructionism” which “incorporates the issue of the validity of claims, as well as relations between social constructions and those of nature into the analysis” (Murphy, 2004, p. 251).

Duncan (1993) argued that content analyses should consider social structures. Applying Duncan’s recommendation to environmental issues, this research takes the stance that considering the context – the social structures that shape how environmental communications are socially constructed – is necessary in order to fully comprehend how environmental issues play out in SRECs. Murphy (2004) stated the following:

Conceptions of nature and risk are socially constructed, but not in a material vacuum. They are constructed by sensory beings using as prompts observations

and experiences of both nature's everyday and extreme dynamics, as well as scientific discoveries about the material world. (p. 261)

As SRECs do not exist in a vacuum, it is necessary to consider the internal and external forces that shape how ski resorts respond to environmental issues. The literature review has endeavoured to provide this contextual background by presenting a history of environmentalism (especially the 1998 arson attack on the Vail ski lodge and the effects of neoliberalism), by describing the role of the Sustainable Slopes Program (the primary voluntary environmental program for ski resorts), and by discussing the various environmental issues present within the context of skiing.

Data Collection

The ski resorts that are evaluated by the SACC (n=82) constitute the sample for this study. The resorts span 11 states (all in the western U.S.) and are graded by the SACC on an annual basis in the following four categories: habitat protection, protecting watersheds, addressing global climate change, and environmental policies and practices (see Appendix B for a more detailed overview of the SACC's grading methodology). As the SACC evaluations are central to this analysis, this sampling technique might be described as "relevance sampling," which Krippendorff (2004) defined as "selecting all textual units that contribute to answering given research questions" (p. 199).

The SACC states the following:

By evaluating ski area responsiveness to the needs of environmental stewardship, local communities, and the recreational public in a manner that is consistent to changing economic and environmental policies, we can potentially influence

current business practices and trends to be increasingly more eco-friendly.

(SACC, 2010, n.p.)

These “Report Cards” provide an outside evaluation of the ski resorts’ environmental actions which will be compared to and contrasted with the standpoint offered by the ski resorts in their SRECs. Of the 82 resorts evaluated by the SACC, 74 are also members of the SSP.

The primary data source will be the actual environmental communications published online by the ski resorts (the grey-shaded box in Figure 6). The SACC Report Cards will comprise the measure of the ski resorts’ degrees of environmentally responsible action. Figure 6 depicts the data sources relevant for this study. The arrows indicate the primary direction of influence in the relationships between the ski resorts and the data sources.

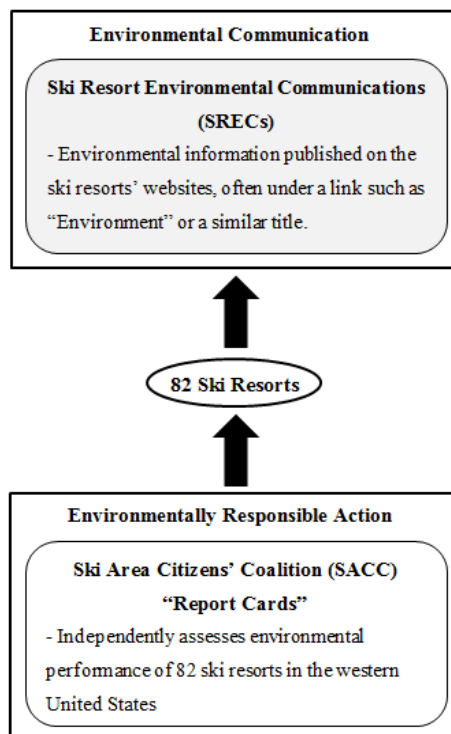


Figure 6. Relationship between the data sources included in this study.

Data Analysis

This study utilizes a content analysis which “is a well-established research methodology commonly used in the social sciences” that “has remarkably benefited from the exponentially increasing volume of electronic data” (Stepchenkova, Kirilenko, & Morrison, 2009, p. 454). Krippendorff (2004) defined content analysis as “a research technique for making replicable and valid inferences from texts (or other meaningful matter) to the contexts of their use” (p. 18). Kurz et al. (2005) stated that “talk (with talk understood as social action in its own right) may in and of itself work to contribute to – or to undermine – the adoption of more environmentally sustainable conduct” (p. 605). SRECs may be seen as the resort managers “talking” to internal and external audiences about environmental issues. The preceding discussion on the impact that environmental communications and policies may have in shaping behaviours emphasizes the need to analyze SRECs. While the author of this manuscript does not know of any insightful research concerning the ability of SRECs to shape proenvironmental behaviours or the optimal wording and presentation of SRECs, it is theoretically feasible that SRECs may play some role in this regard. For instance, Auger, Devinney, Louvierre, and Burke (2008) noted that studies have found that additional information positively affects the customer’s decision to purchase environmentally-friendly alternatives in situations when there is not already a high level of environmental knowledge or awareness. SRECs, therefore, may play an important role due to the lack of general awareness found amongst skiers (Holden, 2000; Hudson & Ritchie, 2001) both in terms of convincing skiers to “purchase” (Auger et al., 2008; Hudson, 1996) and in shaping proenvironmental behaviours (O’Connor et al., 1999; Stern, 2000). Due to the potential marketing and

behaviour-shaping effects of SRECs, it is necessary to evaluate how accurately they reflect both the actual environmental issues present within the context of skiing and the ski resorts' actions to address those issues.

Hudson and Miller's (2005) original model is depicted in Figure 7. The adaptation of their model, which is used to frame this analysis, is presented in Figure 8. SACC issues a grade of A, B, C, D, or F in their Report Cards. However, as no resorts are currently rated "F" the adapted model includes only ratings of A to D. Ski resorts rated A or B will be classified as achieving a "high" degree of environmentally responsible action while resorts rated C and D will be categorized as "low."

The grade for environmental communication is a composite score based upon the prominence of the SREC on the ski resort's website and the breadth and depth of environmental issues covered within the SREC as follows:

- **Prominence:** A ski resort that did not have a SREC available was given a D in this category. Having a SREC available but not as a direct link on the homepage (for example, "environment" had to be entered into the search bar to locate the SREC) earned a grade of C. A ski resort that had a direct link for their SREC at the bottom of their website homepage received a B. If the link was at the top of the homepage either as a direct link or in a drop-down menu (i.e. alongside links such as "Trail Map" and "Lift Tickets") the resort was assigned an A.
- **Breadth:** As 74 of the 82 resorts included in this study endorse the SSP, the list of environmental issues within the context of skiing is taken from the SSP Charter (see Appendix C). The SSP Charter lists 11 categories of environmental issues including planning, design, and construction; operations; energy conservation and

clean energy; waste management; fish and wildlife; forest and vegetative management; wetlands and riparian areas; air quality; visual quality; transportation; and education and outreach (NSAA, 2005). The SSP Charter's delineation of environmental issues is robust, including more issues than were highlighted by Holden (2000). Further, the Charter provides detailed "Principles" and "Options for getting there" (see Appendix C) within each category, improving the ease of categorizing the efforts of ski resorts and, thus, enhancing reliability. The SREC's breadth will be graded according to the number of these issues that are discussed. Zero to two issues covered will equate to a D, three to five a C, six to eight a B, and nine to 11 an A.

- **Depth:** The SREC's depth will be graded according to the number of "specifics" provided for the 11 environmental issues outlined by the SSP Charter. Specifics are defined as information that allows the reader to differentiate one resort's proenvironmental efforts from another. For instance, a ski resort which states "we are aiming to reduce energy use by 20% by 2020" will be considered to have provided specifics whereas one that states "energy use reduction is a top priority" will not. Providing specifics regarding zero to two of the 11 environmental impacts of skiing will earn a D, for three to five issues a C, for six to eight issues a B, and for nine to eleven issues an A.

The grades for the three categories will be averaged to form a composite score. A ski resort, for example, earning B's for Prominence and Breadth and an A for Depth will be assigned a final letter grade of B for the environmental communication component. The ski resorts will then be placed in the adapted model (Figure 8) to classify them as

inactive, exploitive, reactive, or proactive. Figure 9 depicts an overview of the grading criteria for the environmental communication axis of the adapted Hudson and Miller (2005) model.

		ENVIRONMENTAL COMMUNICATION Measured by analysis of brochures, newsletters, websites, company reports, press releases, signs, and awards.	
		LOW	HIGH
ENVIRONMENTALLY RESPONSIBLE ACTION Measured by analyzing: Environmental policy Policy on wildlife Policy on vegetation Waste management Fuel management Energy & recycling Forest harvesting Education & training Community relations Research & knowledge Connections to regulatory regimes	LOW	INACTIVE No support or involvement from top management Environmental management not necessary No environmental reporting No employee environmental training or involvement	EXPLOITIVE Some involvement of top management Environmental issues dealt with only when necessary External reporting but no internal reporting Little employee training or involvement
	HIGH	REACTIVE Some involvement of top management Environmental management is a worthwhile function Internal reporting but no external reporting Some employee environmental training or involvement	PROACTIVE Top management involved in environmental issues Environmental management is a priority item Regular Internal and external reporting including an environmental plan or report Employee environmental training or involvement encouraged

Figure 7. A model for responsible marketing (Hudson & Miller, 2005).

		Environmental Communication SREC Score			
		Low		High	
		D	C	B	A
		Reactive		Proactive	
Environmentally Responsible Action SACC "Report Card" Score	High	A			
		B			
			Inactive	Exploitive	
	Low	C			
		D			

Figure 8. An adaptation of Hudson and Miller's (2005) model.

Prominence	
Not available	D
Indirect link	C
Direct link at bottom of homepage	B
Direct link at top of homepage	A
Breadth	
0 - 2 issues covered	D
3 - 5 issues covered	C
6 - 8 issues covered	B
9 - 11 issues covered	A
Depth	
0 - 2 issues covered	D
3 - 5 issues covered	C
6 - 8 issues covered	B
9 - 11 issues covered	A

Figure 9. The grading methodology for environmental communication.

This analysis is aimed at answering the following research question:

RQ: How are environmental issues socially constructed within the environmental communications of the ski resorts that are graded by the Ski Area Citizens' Coalition, and according to an adaptation of Hudson and Miller's (2005) model (see Figure 8) would these resorts be classified as inactive, exploitive, reactive, or proactive?

The research question will be answered by content analyzing the SRECs and utilizing an adaptation of Hudson and Miller's (2005) model to compare the level of environmental communication (as depicted by the SRECs) to the degree of environmentally responsible action actually undertaken by the ski resorts (as assessed by the SACC Report Cards).

This research is especially pertinent for ski resort managers but also of interest for sport managers in other fields, environmental directors in various programs, and others who find themselves tasked with developing effective environmental communications. As proposed by Mallen et al. (2011), "sport-ES research should be aligned with the needs of the sport practitioners" (p. 251). This study endeavours to build both pragmatic and theoretical knowledge regarding SRECs.

Rivera and de Leon (2004) and Rivera et al. (2006) compared SSP participation with the environmental impact of ski areas and found that endorsement of the SSP was not correlated with improved environmental performance. Whereas Rivera and de Leon (2004) and Rivera et al. (2006) were primarily concerned with the role of voluntary environmental programs, in the present study the focus is on environmental communication. While SSP participation is an important factor, the environmental actions and communications of ski resorts include many other elements. To emphasize this point consider that some SSP members do not even note their participation in the

program on their websites. The present study differs from Rivera and de Leon (2004) and Rivera et al. (2006) in that the focus is on environmental communications as compared to environmental performance. Rivera and de Leon (2004) and Rivera et al. (2006) were concerned with participation in the SSP compared with environmental performance. They did not analyze the actual communications of ski resorts.

Trustworthiness

Krippendorff (2004) defined validity as “that quality of research results that leads us to accept them as true, as speaking about the real world of people, phenomena, events, experiences, and actions” (p. 313). This content analysis possesses social validity which may be defined as “that quality of research findings that leads us to accept them on account of their contribution to the public discussion of important social concerns” (Krippendorff, 2004, p. 314). As environmental issues have become “important social concerns,” illuminating a previously overlooked source, SRECs, meets the requirements of social validity. The trustworthiness of this research is enhanced by clearly delineating how the SRECs will be graded (Figure 9), thus making the study replicable.

Environmental issues often evoke strong opinions. Notably, this analysis will not attempt to judge whether the ski resorts in question are or should be environmentally-friendly. The focus, rather, is on judging the strength of the SRECs in capturing the various environmental impacts of skiing and accurately presenting the ski resorts’ environmental efforts. It should be made explicit that the author’s social constructions will inevitably shape the analysis on some level. However, the possibility of preconceived notions weakening the analysis will be reduced by using the SACC Report

Cards to judge the degree of environmentally responsible action and a clearly defined and replicable methodology to grade the SRECs.

Limitations

The proposed study contains noteworthy limitations. First, the sample contains only those ski resorts that are graded by the SACC. As noted previously, these resorts are all in the western U.S. and, as such, the results are potentially particular to this specific sample. However, while only one-third of ski resorts in the U.S. are in the west they “have consistently attracted over 50% of the total annual skiers” (River & de Leon, 2004, p. 419). Further, as noted previously, the SACC evaluates many of the larger ski resorts. Moon and de Leon (2007) noted that larger organizations, due to their typically greater visibility and impact, may respond differently to environmental issues. A ski resort’s size may dictate how it responds to environmental issues.

Patton (2002) defined data triangulation as “the use of a variety of data sources in a study” (p. 247), and the second major limitation of this study is the lack of complete triangulation. As Patton (2002) stated, “A study’s limited budget and time frame will affect the amount of triangulation that is practical” (p. 247). It would be ideal to collect interview data from environmental directors of ski resorts, to empirically investigate the effectiveness of many different SRECs, and to analyze other internal documents created by ski resorts. However, the sample size of 82 SRECs already constitutes a sizeable amount of text.

Triangulation is also limited in that the SACC Report Cards are the only source of assessments of the environmental performance of the ski resorts included in this study. As noted previously, the NSAA has been critical of the SACC’s grading methodology

(Rivera & de Leon, 2004; Rivera et al., 2006). The NSAA's (2010) stated objective is to "meet the needs of ski area owners and operators nationwide and to foster, stimulate and promote growth in the industry" (n.p.). Meanwhile, the SACC (2010) primarily "works to promote environmental stewardship" (n.p.). While the NSAA certainly has a vested interest in improving the sustainability of the skiing industry (as indicated by the SSP), the underlying missions of the two organizations are overlapping but not necessarily congruent.

Each year the NSAA identifies a ski resort that will receive the Golden Eagle Award for environmental excellence. Between 2000 and 2004 the Golden Eagle Award recipient was also the highest ranked resort by the SACC in four out of five cases (Rivera et al., 2006). While this fact alone is not proof of the validity of the SACC's methodology, it is indicative of some level of agreement between the two organizations regarding what qualifies as strong environmental performance. Rivera et al. (2006) repeatedly asked for access to the data collected as part of the SSP program, but the NSAA refused. The NSAA denigrates the SACC Report Cards but does not allow access to the only comprehensive alternative source of information, thus necessitating reliance on the SACC.

Chapter Four: Findings and Discussion

Summary of Findings

In essence, this research has endeavoured to comprehend how two factors – SRECs and environmental performance – interact. Stemming from this interaction are questions regarding how sport impacts the environment, the effects of the environment upon sport, the role of environmental communications in encouraging or inhibiting proenvironmental behaviours, how sport organizations respond to and shape environmental issues, and the underlying human-environment relationship. In the author's opinion, this study has crystallized the idea that skiing is an incredibly germane context in which to consider the relationship between sport and the environment.

This study's sample consisted of the 82 (n=82) ski resorts in the western United States that are graded by the SACC. A content analysis was utilized to examine how environmental issues are socially constructed within the SRECs and compare those constructions with the ski resorts' actual environmental performance. An adaptation of Hudson and Miller's (2005) model for responsible marketing was utilized in order to classify the resorts as inactive, reactive, exploitive, or proactive in terms of their approach to environmental communication.

The results of the data analysis are presented in Figure 10. A breakdown of the SRECs' scores for prominence, breadth, and depth can be found in Appendix One. Of the 82 ski resorts analyzed in the study, 24% were found to be inactive in their approach to improving environmental performance and communicating such efforts, 10% reactive, 23% exploitive and 43% proactive.

Environmental Communication SREC score							
Low			High				
D		C		B			
Reactive			Proactive				
A	Bogus Basin		Alpine Meadows Boreal Park City Powderhorn Schweitzer Squaw Valley	Sundance	Aspen Highlands* Aspen Mountain* Buttermilk* Deer Valley Grand Targhee Jackson Hole	Sugar Bowl Wold Creek	
High	Crested Butte Loveland Mountain High Mt. Baker Pebble Creek	Mt. Bachelor Mt. Shasta	Arapahoe Big Sky Bridger Bowl Dodge Ridge Durango Kirkwood	Monarch Moonlight Basin Summit at Snoqualmie Vail	Alta Crystal Mountain Homewood Mammoth Mountain Mission Ridge Mt. Rose	Sierra-at-Tahoe Snowmass* Stevens Pass Telluride	
Inactive							
C	Bear Mountain Brian Head Eldora Lost Trail Mt. Spokane Red Lodge	Red River Silver Mountain Ski Apache Ski Santa Fe Snowbasin Snow Summit	Solitude Whitethorn 49° North	Snow Valley Timberline	Brighton Canyons China Peak Montana Snowbowl Mt. Ashland Mt. Hood	Bear Valley Beaver Creek Heavenly Keyston Steamboat Snowbird	Winter Park
Low	Arizona Snowbowl White Pass	Brundage	Breckenridge Las Vegas Ski & Snowboard Sun Valley Taos	Copper Mountain			
D							

Environmentally Responsible Action
SACC "Report Card" Score

Figure 10. Summary of findings.

Socially Constructed Environmental Issues and SRECs

A primary method by which an organization may attempt to shape its legitimacy is utilizing communication “to become identified with symbols, values, and methods of operation [and] with institutions, values, or outputs that are strongly believed to be legitimate, and, as such, to demonstrate congruence between its organizational practices and the values professed by its social environment” (Aerts & Cormier, 2009, p. 3). This dynamic is reflected in the results of the present study. Figure 11 depicts the number and percentage of ski resorts that earned points for breadth and depth for each of the 11 environmental issues delineated by the SSP Charter (see Appendix C). Topics related to energy-efficiency, recycling, and air quality (especially greenhouse gas emissions) are frequently mentioned in the SRECs. By “tapping into” these popular themes the ski resorts can attempt to gain legitimacy in a social environment sensitive to such issues. Environmental issues that do not enjoy a high public profile (such as damage to wetlands and riparian areas), on the other hand, are generally not prominently feature in the SRECs.

SSP Environmental Principles	Breadth	Depth
Waste Management	57 (95%)	54 (90%)
Air Quality	54 (90%)	52 (87%)
Energy Conservation and Clean Energy	54 (90%)	51 (85%)
Education and Outreach	52 (87%)	49 (82%)
Planning, Design, and Construction	49 (82%)	49 (82%)
Operations	49 (82%)	46 (77%)
Transportation	48 (80%)	46 (77%)
Forest and Vegetative Management	44 (73%)	41 (68%)
Visual Quality	42 (70%)	38 (63%)
Fish and Wildlife	33 (55%)	31 (52%)
Wetlands and Riparian Areas	21 (35%)	17 (28%)

Figure 11. Breadth and depth of the SRECs.

This section focuses on how ski resorts socially construct environmental issues. These constructions are inferred by evaluating which topics are focused on (or,

conversely, neglected) and detailing the ways in which those subjects are conceptualized within the SREC narratives. The following topics of interest, chosen due to their significance in the literature review or repeated mentioning in the SRECs themselves, will be reviewed: snowmaking, off-piste skiing, recycling, energy-efficiency, greenhouse gas emissions, and climate change. A discussion of the social construction of sustainable development within the SRECs will conclude this section.

Snowmaking.

As discussed in the literature review, snowmaking is one of the most prominent environmental impacts of skiing (Jong, 2007; Schmidt, 2006). Over half of the SRECs mention snowmaking. The word “snowmaking” appears close to 100 times in the SRECs (which constituted over 100,000 words of text in aggregate) while the word “gun(s)” (as in snowmaking gun) is cited over 50 times. The issue is typically discussed in the context of technological innovations endeavouring to make the process of snowmaking more efficient.

Squaw Valley USA utilizes 100% recaptured water (snowmelt) to make snow. Sugar Bowl carefully monitors the lake from which they source water for snowmaking. Several resorts (such as Boreal Mountain Resort, Squaw Valley, and Aspen) have begun converting to newer, more efficient snowmaking guns. Boreal’s (n.d.) SREC notes that “converting the old diesel powered compressors for the snowmaking system to SMI Fan Guns is saving 250 tons of carbon emissions each year” (n.p.). Some resorts respond to the issue by purchasing renewable energy credits. Kirkwood switched to biodiesel for their snow blowers. Beaver Creek (n.d.) noted their construction of a reservoir that “is

filled in spring by snowmelt and runoff and is stored until the beginning of the following winter to be used for snowmaking” (n.p.).

As noted in the Literature Review, artificial snow melts more slowly than natural snow, disrupting the freeze-thaw cycle and potentially harming flora and fauna (Hudson, 1996). Interestingly, Mission Ridge Ski & Snowboard Resort (2011) chose to put a positive spin on this issue by stating, “Snowmaking stores water on the mountain in higher density than natural snow thus creating a more consistent melt-off for downstream irrigators and farmers” (n.p.). Note that although many would argue that slower melting is not the most salient impact of snowmaking there are diverging social constructions for even this “secondary” issue.

Off-piste skiing.

Notably, off-piste skiing (which in the context of ski resorts typically involves using chair lifts to access backcountry skiing on unmaintained slopes) is not mentioned within a single SREC. Holden (2000) noted that off-piste skiing can disturb both flora and fauna. Environmental issues resulting from off-piste skiing in some ways parallel impacts caused by summer activities at ski resorts. The primary operational purpose of the ski area is to provide winter recreation (presumably on groomed slopes). This in and of itself is not directly responsible for impacts related to off-piste skiing and summer activities. However, the resort’s infrastructure (chairlifts, parking areas, and so forth) allows humans to enter potentially sensitive areas that would otherwise be much more difficult to access. It should be noted that a number of resorts post signs prohibiting off-piste skiing (arguably more for reasons of liability than ecology). The lack of attention given to this topic in the SRECs, however, indicates that the ski resorts do not see off-

piste skiing as an important environmental issue or are reluctant to discuss it. Skiers who enjoy off-piste skiing may be discouraged from choosing a resort that stridently attempts to prevent it. It is arguably much easier for a resort to post signs “disallowing” or “advising against” off-piste skiing (again, perhaps chiefly for liability) without actually endeavouring to eliminate such activity. Another potential reason for this topic’s absence in the SRECs is the lack of appeal the issue wields in comparison with climate change, recycling, carbon emissions, and other more “popular” subjects.

Recycling and energy efficiency.

Recycling programs, as might be expected, proved to be extremely popular. Ninety-two percent (92%) of ski resorts mention some type of recycling program (whether for plastic bottles, used fryer oil, or ski lift parts). Initiatives related to energy use also proved to be very common, with 90% of resorts engaging in some such endeavour. A content analysis of websites of *Fortune* Global 500 companies found that resource/waste management was the environmental concern highlighted most frequently (Kim, Nam, & Kang, 2010). Further, the study regarding sport facility managers by Mallen et al. (2010b) found that programs that led to easily quantifiable benefits and cost savings were heavily favoured. This tendency is also apparent in the SRECs. Installing energy-efficient light bulbs and offering recycling bins, for instance, are common projects. These types of efforts constitute win-win situations for the resorts, making financial sense and leading to fairly easily quantifiable environmental benefits. The words “recycling” and “recycle” are mentioned a total of more than 500 times in the SRECs. “Energy” and “electricity” are stated nearly 600 times.

Several resorts participate in the Leadership in Energy and Environmental Design (LEED) program to some extent. The LEED program “provides building owners and operators with a framework for identifying and implementing practical and measurable green building design, construction, operations and maintenance solutions” (U.S. Green Building Council, n.d., n.p.). The U.S. Green Building Council (n.d.) states, “An upfront investment of 2% in green building design, on average, results in life cycle savings of 20% of the total construction costs – more than ten times the initial investment” (n.p.). The LEED program issues four levels of certification (certified, silver, gold, and platinum), and the ski resorts in this study have constructed buildings at all four levels. Participation in the LEED program underscores the range of environmental issues present within the context of skiing and the complex array of guidelines and standards that resort managers need to be familiar with.

Greenhouse gas emissions and climate change.

Given the media attention received by the issue of greenhouse gas emissions and the related subject of climate change, it is interesting to examine the prominence of these topics within the SRECs. “Greenhouse gas emissions” and similar phrases (including CO₂ emissions, carbon footprint, and carbon emissions) appear approximately 450 times within the SRECs and are discussed by 77% of resorts. Climate change (or global warming) is highlighted by 52% of resorts. The SRECs that included these issues often discuss how the resort is taking steps to curb harmful emissions and reduce or eliminate their contribution to climate change.

Transportation to and from the resort constitutes a significant contribution to greenhouse gas emissions, and many of the ski resorts urge skiers to offset these

emissions by purchasing SkiGreen™ tags (which are offered for \$2 or skiers can opt to buy a “season pass” for \$20). Some resorts, such as Mt. Hood Meadows (n.d.), encourage skiers to buy SkiGreen™ tags by noting that “[g]reenhouse gas emissions can contribute to unusually warm winter temperatures and a less reliable snowpack in the mountains” (n.p.). Essentially, this statement exemplifies the neoanalytic technique described by Winter (2000) which appeals to feelings (in this case fear that skiing conditions will deteriorate) in order to shape proenvironmental behaviours.

Many resorts also organize carpooling programs. Sugar Bowl estimates that 326,000 vehicle miles were avoided during the past skiing season due to their carpooling program. Kirkwood Mountain Resort’s online forum was responsible for taking over 1,000 cars off the road during the 2009/2010 season. Some resorts also utilize initiatives such as shuttle services or priority parking for hybrid vehicles to curb emissions. Additionally, policies against idling (both for guests in the pick-up/drop-off areas and employees operating vehicles around the base area) are frequently noted in the SRECs. As quoted by one resort,

Mt Bachelor instilled a No Idling program in December 2007 to reduce pollution, decrease health risks, save engine wear, and conserve fuel and money. Further consideration for this program was inspired by children, as the drop-off area is frequented by kids who are at higher risk as they inhale more air per body weight. (Mt. Bachelor Ski Resort, n.d., n.p.)

Most of the resorts that discuss climate change note the significant contribution to emissions resulting from ski resort operations and related activity. Bear Valley Mountain (n.d.), however, states, “While we believe we are a relatively small source of greenhouse

gas emissions, we recognize the need to educate others on the importance of reducing our foot print on the environment and that we will need the help of many other industries to counter act the climate change reality that we all share” (n.p.). Bear Valley’s SREC, meanwhile, notes several projects the resort is engaged in to mitigate emissions (purchasing renewable energy and offsets, being certified as carbon neutral, improving energy-efficiency of facilities and snowmaking, and so forth). Bear Valley is the only resort analyzed in this study that openly attempts to deflect blame away from the skiing industry. Other resorts generally acknowledge the significance of the environmental issues present within the context of skiing. Aspen Snowmass (n.d.), for instance, bluntly states, “Our business has huge environmental impacts” (n.p.). Given the current prominence of skiing in the environmental literature, it seems anachronistic for Bear Valley to deflect blame towards other industries. A response such as that offered by Aspen Snowmass corresponds more to current research and public opinion regarding skiing’s environmental impact.

Several resorts engage in programs to offset emissions, many purchasing enough offsets to balance 100% of their electricity use. Park City Mountain Resort has completed an ecological footprint analysis. They say, “We knew the largest component of our Ecological Footprint was our use of electricity. What was interesting is that the secondary components were food materials, primarily beef and cheese” (Park City Mountain Resort, n.d., n.p.). Similarly, Stevens Pass (2011) says, “Like many resorts, by far our biggest impacts on the environment are energy consumption and transportation, due to the greenhouse gas emissions produced, followed by foodservice operations” (n.p.).

Sustainable development.

Another topic of interest when analyzing the data was the social constructions of the concept of sustainable development within the SRECs. The majority of the SRECs do not explicitly link ES with economic development. Several resorts, however, do employ the “economic” or “developmental” conceptualization of environmentalism advanced by the UN, the IOC, and others (as discussed in the section “Sustainability and sustainable development” near the beginning of the Literature Review). Statements in this vein include rather simple quips such as “snow is our livelihood” (Boreal Mountain Resort, n.d., n.p.) and “snow is our business” (Monarch Mountain, n.d., n.p.). Mammoth Mountain Ski Area utilizes the phrase “sustainable development.” Similarly, Mt. Hood Meadows Ski Area (n.d.) states that it embraces “the principles of sustainable operations and development and continuously strives to take steps to become more sustainable” (n.p.). Copper Mountain (n.d.) says, “Copper recognizes that sustaining our environment is critical to the future success of our business and to future generations” (n.p.). In sum, a relatively small portion of ski resorts opted to overtly link ES with “business concerns.”

Some resorts, however, did explicitly associate environmental issues with economic concerns. Consider, for example, the following statement: “Sugar Bowl places a high value on our natural surroundings, and we realize they are our greatest current and future asset” (Sugar Bowl, n.d., n.p.). Northstar-at-Tahoe Resort (n.d.) says, “[We] are committed to managing our property to enhance natural resource values while operating a successful business” (n.p.). Stevens Pass (2011), referring to climate change, says, “If you’re in a snow-related industry, that’s obviously going to affect the bottom-line” (n.p.). Similarly, Mt. Bachelor Ski Resort (n.d.) states, “For a business based on winter sports, it

is imperative that we do our part to Keep Winter Cool” (n.p.). While a portion of the resorts overtly link sustainability and development, the bulk of the SRECs instead emphasize the necessity of “saving our snow” to ensure that skiing remains an *environmentally* viable sport. Bridger Bowl (n.d.), for example, says, “Global warming trends have obvious implications for ski areas. Although the demise of winter recreation would have a devastating impact on all of our local snow sport enthusiasts, the loss of snow pack in the mountains would potentially have much greater catastrophic ramifications for life, period, in Southwest Montana” (n.p.). Note that Bridger Bowl’s statement connects environmental impact with the sport’s (rather than the resort’s) sustainability. It can, of course, be argued that it is implicit in this social construction that economic viability also hinges on ES. The motivations behind resorts opting not to make this link explicit would be an interesting topic to explore in the future, perhaps through interviews with the authors of the SRECs. Such a study might elucidate whether ski resorts are engaging in environmental efforts in order to respond to regulations or to garner a competitive advantage.

Prominence, Breadth, and Depth

Each SREC’s prominence was graded based upon the link’s location on the ski resort’s homepage. Twenty-seven (33%) of the resorts’ websites feature a link for the SREC at the top of the homepage and were thus awarded A’s for the prominence category. Eighteen ski areas (22%) were given B’s – a direct link exists for the SREC, but only at the bottom of the homepage (typically in small font). The SRECs of 15 ski resorts (18%) are difficult to locate as they do not exist as a direct link anywhere on the homepage. These resorts were assigned C’s. Finally, 22 of the ski areas (27%) do not

publish SRECs and were therefore given D's. Some resorts' websites include one or two brief comments regarding environmental issues but are deemed to not have SRECs due to the lack of prominence, breadth, and depth of the environmental communication. In Arizona Snowbowl's (n.d.) "About Us" section, for example, it is stated that their goal is "to provide a quality recreational experience with a devoted commitment to the sensitive environment that surrounds us" (n.p.). As Arizona Snowbowl's website makes no other mention of environmental issues, the resort was deemed to not have an SREC.

The majority of the titles of the links for the SRECs include the word "Environment" or a derivative of it (such as Our Environment, The Environment, Environmental Efforts, Environmental Initiatives, Environmental Awareness, and so forth). In sum, 45 of the 60 links (75%) utilize one of these derivatives. Five resorts label the link "Sustainability." The word "Green" is used by four resorts (Green Initiatives or Green Statement, for instance). Two resorts feature their SRECs under links labeled "Master Plan." The remaining four SREC are titled "One Planet," "True to Nature," "Stewardship," and "Conserve."

The most interesting result to arise from this portion of the analysis was that 74% of exploitive ski resorts earned A's for prominence whereas the corresponding figure for proactive resorts was only 46%. Presumably, a ski resort will more easily be able to improve its environmental communication than its environmental performance. This point is especially salient given that all proactive resorts currently publish SRECs which were graded A or B in this study. It would arguably be quite simple for these resorts to more prominently display the environmental information they already possess

(information that, importantly, accurately portrays the resorts actual proenvironmental efforts).

The results for the breadth and depth categories are summarized in Figure 11. Any cursory mention of one of the 11 categories of Environmental Principles featured in the SSP Charter (see Appendix C) earned a point for breadth. For instance, Timberline Lodge and Ski Area (n.d.) states, “Our company-wide commitment is to light-on-the-land, best management practices, and to energy conservation and waste reduction throughout our operations” (n.p.). Timberline was awarded points in the breadth category for mentioning the SSP Environmental Principles of “Energy Conservation and Clean Energy” and “Waste Management.” Another example is Alpine Meadows’ (n.d.) statement that they engage in “extensive recycling” (n.p.). Alpine Meadows was awarded a point for breadth in the Waste Management category. In both cases no further data or specifications are provided regarding the resorts’ efforts to improve environmental performance in these categories so no points for depth were assigned.

Depth is conceptualized as information that offers some level of differentiation. The most obvious mark of depth is quantification of the resort’s efforts to improve environmental performance. Las Vegas Ski & Snowboard (n.d.) states that they have “recently purchased 100% renewable energy for its city office” which “reduced carbon-emissions by 29,491 pounds/year” (n.p.). The resort was thus awarded points for depth in both the Energy Conservation and Green Energy and the Air Quality categories (the SSP charter classifies purchases of green energy in both categories). Technical projects also earned the resorts points for depth. The SREC of Squaw Valley USA (2010), for instance, states that they had installed:

a Silicon Control Rectifier (SCR) motor to run the Cable Car and a lighting retrofit (fiber optic lighting) in the Cable Car building, a hydronic heat system driven by lift motors in the Funitel building, an incinerator that heats the Gold Coast complex, a heat exchange system that freezes the ice in the Olympic Ice Pavilion while simultaneously heating the Swimming Lagoon & Spa and surrounding walkways at High Camp, as well as a geothermal heat pump that heats the 12,000 sq. ft. Squaw Kids children's facility. (n.p.)

While quantification and technical projects most clearly provided differentiation, other forms of specification were also conceptualized as constituting depth. For instance, resorts that state that they used only non-toxic cleaning supplies were considered to have provided depth for the SSP principle of Waste Management. Carpooling incentives (such as discounted lift tickets for vehicles with four or more passengers) counted as depth for Transportation. The Education and Outreach principle frequently included efforts such as supporting environmental organizations, offering environmental education programs, encouraging employees to get involved in environmental efforts, and so forth. Brighton Resort (2011), for example, has a volunteer who is available to take skiers on a guided tour "making stops to learn about the mountain animals, the water, the forest, and the local mining history" (n.p.). While many of these efforts are perhaps "simpler" than those described with quantification or technical terms, the resorts are outlining the specific steps they are taking and going far beyond comparatively empty statements such as "environmental education is a priority" (a resort stating this would earn a point for breadth but not depth). The common theme amongst the ski areas that earned points for depth is that in all cases the reader was able to differentiate what that particular resort was

doing from the efforts undertaken by another resort. Given that Rivera and de Leon (2004) and Rivera et al. (2006) found that participation in the SSP was not correlated with better environmental performance, differentiating between breadth and depth is of key importance. Similar reasons may provide the impetus for publishing a “shallow” SREC and joining the SSP – doing so requires relatively few organizational resources and very little commitment. Mechanisms are needed to ensure that both SSP participation and publication of a SREC are indicative of substantive efforts to improve environmental performance.

Perhaps the most striking result of this segment of the analysis was the lack of significant gaps between the breadth and depth categories (see Figure 11). Indeed, in sum there were only 29 fewer points awarded for depth than breadth. This seems surprising to the author of this manuscript considering that the analysis included 60 SRECs and 11 Environmental Principles – a total of 660 possible points to be awarded. Stated differently, the Environmental Principles received less than 6% fewer mentions for depth than they did for breadth. Before analyzing the SRECs, a preliminary hypothesis was that noteworthy disparities would exist between the points awarded for the breadth and depth categories. It would appear that the resorts that deem it worthwhile to publish environmental communications do not take the task lightly, typically expending the necessary resources to formulate a SREC that contains a certain level of detail.

Aerts and Cormier (2009) distinguished between social-based and economic-based information. The former includes statements about sustainability that are less objective and more easily imitated while the latter focuses on “the financial, legal and operational consequences of corporate environmental activities” (Aerts & Cormier, 2009,

p. 17). Interestingly, Aerts and Cormier (2009) found that the “more subjective social-based environmental disclosure in annual reports does not affect media legitimacy, whereas the more objective, harder part of annual report environmental disclosure does” (p. 23). The dichotomy between social-based and economic-based disclosures is somewhat analogous to the line drawn in the present study between breadth and depth. Analysis of the SRECs demonstrated that only 6% fewer points were awarded for depth than breadth. While Aerts and Cormier’s (2009) sample was constituted of corporate annual reports, it still seems plausible to suggest that the specificity of the SRECs may improve their effectiveness in developing organizational legitimacy. Further investigation of the issue is certainly warranted in terms of if Aerts and Cormier’s (2009) results regarding the effectiveness of social-based versus economic-based disclosures hold true for ski resorts.

Profiles of Inactive, Reactive, Exploitive, and Proactive Ski Resorts

Inactive ski resorts and environmental legitimacy.

Hudson and Miller (2005) stated that organizations in the inactive category “tend not to see the benefits of allocating any resources toward environmental activities; they have a low level of commitment to both environmental improvement and to communication of environmental activities” (p. 134). In this study, the ski resorts classified as inactive received poor (C or D) SACC scores for environmental performance. These resorts either do not have SRECs or publish cursory SRECs which contain very little information and are not prominently displayed on their websites. Snow Valley Mountain Resort’s SREC, for example, can only be accessed by clicking on a link at the bottom of the resort’s webpage (rather than the top) and there is a paucity of text

(the SREC is approximately 150 words in length). Snow Valley briefly mentions several environmental issues (recycling, energy use, and snowmaking efficiency), but fails to provide in-depth information on the myriad environmental impacts present within the context of skiing as outlined in the review of literature. The SACC assigned Snow Valley a poor score for failing to protect undisturbed lands from development, not addressing global climate change, and lacking strong environmental policies and practices. As demonstrated by Snow Valley, a resort need not entirely lack environmental communications in order to be classified as inactive. This classification strategy was chosen due to Hudson and Miller's (2005) statement that inactive organizations demonstrate "a low level of commitment" – not necessarily a complete lack of effort.

The credibility of the skiing industry in dealing with environmental issues has been questioned (Rivera & de Leon, 2004; Rivera et al., 2006; Steelman & Rivera, 2006). Aerts and Cormier (2009) said, "Within a communication context, credibility refers to the congruence between the source's verbal claims and the corresponding acts and events" (p. 2). The environmental communications of ski resorts, therefore, become key factors in the development of organizational legitimacy in a world where the public is increasingly knowledgeable and aware of environmental issues. Aerts and Cormier (2009), whose study focused on publicly-traded corporations in North America, found "that environmental legitimacy is significantly and positively affected by the extent and quality of annual report environmental disclosures" (p. 2). Inactive resorts have failed to take significant steps, both in terms of communication and performance, towards developing environmental legitimacy. This study does not claim to determine the pretexts for the lack

of initiative demonstrated by inactive resorts, but ski resort size is likely an important variable to consider.

MountainVertical.com has data regarding the total number of “skiable acres” for each of the ski resorts included in this study. MountainVertical.com (2011) states that:

Skiable Area is simply the number of acres of terrain at a resort that is designated for skiing. This includes cut trails, bowls and snowfields, and gladed runs. Skiable area does not include backcountry, or the unmarked area between trails (unless it has been specially gladed for tree skiing). We also don't include the footprint occupied by a resort's restaurants and facilities, such as base lodges and parking lots. (n.p.)

Skiable area is reported as a range “because of the complexity of calculating only the area on marked runs (not the area between trails), as well as measuring the surface area of the mountain face over all of the varied mountainous terrain (this is different from just measuring the footprint)” (MountainVertical.com, 2011, n.p.). Inactive resorts have by far the smallest skiable area of the four categories, with an average between 840 and 1,163 acres. Indeed, this equates to approximately half the average range of skiable area of exploitive and proactive resorts. This supports the notion that a ski resort’s size (in terms of annual revenue rather than skiable area, although the two metrics are likely related) to some extent determines both the level of environmental performance and the extent of environmental communication. This echoes Moon and de Leon’s (2007) argument that organization size significantly impacts how environmental issues will be approached, with larger organizations demonstrating greater effort.

Reactive ski resorts and the compliance-based paradigm.

Only 10% of resorts in this study were classified as reactive. This category includes “those that see the benefits of environmental action (perhaps for regulatory purposes), but fail to communicate these efforts” (Hudson & Miller, 2005, p. 134). In 2010 SKI Magazine surveyed skiers in order to determine the top 29 resorts in North America for overall satisfaction. It is interesting to see how SKI Magazine’s survey compares with the results of this analysis. Only one of the eight resorts in the reactive category in this manuscript was ranked in the top 29 for overall satisfaction (and the resort that was ranked, Crested Butte, came in at number 24 in the SKI Magazine survey). Three of the top 29 ranked resorts were classified as inactive (being placed at numbers 19, 26, and 29, respectively, in the SKI Magazine survey). An interpretation of this dynamic is that the resorts in the reactive and inactive categories may lack the “public profile” that encourages many of the larger, higher-ranked ski areas to exhibit a greater degree of environmental communication. As a point of reference, 73% of the resorts in this study published SRECs while 90% of the resorts ranked in the top 29 by SKI Magazine have written SRECs. This may well indicate that the larger, visible ski resorts (the ones that are traditionally going to be ranked as the “top” resorts in the country) are more likely to publish SRECs.

Jose and Lee (2006) stated that there are two distinct phases in the corporate environmental movement. The first stage, the compliance-based paradigm, is driven by legal and regulatory pressures while the second stage, the competitive advantage paradigm, is propelled by the argument that better environmental performance can lead to improved financial performance (Jose & Lee, 2006). Jose and Lee (2006) stated,

[T]here is some evidence that there is a paradigm shift taking place with respect to the strategic drivers and philosophical underpinnings of corporate environmental management practices. Corporate disclosures show that companies, instead of driven primarily by laws and regulations, are driven by non-legal factors. Many companies in our study associate environmental considerations with corporate sustainability and stakeholder responsiveness, and most of them justify their environmental programs based on competitive advantage reasons (27%) than for compliance reasons (21%). (p. 317)

The research conducted by Jose and Lee (2006) is highlighted in order to demonstrate the variability of text falling under the heading “environmental communication.” Jose and Lee (2006) studied large, publicly-traded corporations. These companies generally face much greater regulatory and reporting standards than the ski resorts analyzed in the present study. While Jose and Lee (2006) were able to content analyze the corporate environmental disclosures to determine if the companies in question were driven by compliance or competitive advantage, such data cannot necessarily be garnered from the SRECs. Only a handful of SRECs disclose their authors or provide contact information for questions and inquiries. Furthermore, most ski resorts are private entities. Less than 10% of the 110 ski resorts in the study by Rivera et al. (2006) are publicly-traded. While some of the organizations in the present study (such as Aspen Snowmass, a conglomerate that owns five ski resorts) may respond to environmental issues in much the same way as the corporations in Jose and Lee’s (2006) sample, others tout their “Mom and Pop” history and atmosphere.

While delineating between compliance-based and competitive advantage paradigms solely from analyzing SRECs may not be feasible, it is insightful to note the corollaries between ski resorts classified as reactive in this study and the compliance-based paradigm. Reactive ski resorts may primarily be responding to external pressures to improve environmental performance and engaging in such activities in order to achieve *compliance*. While it is certainly also plausible that reactive ski resorts are improving environmental performance for “intrinsic” reasons, one might posit that if that were the case a range of ski resort sizes would be included in the reactive category. However, based upon MountainVertical.com’s data, ski resorts in the reactive category have a larger skiable area (with an average somewhere between 1,344 to 1,750 acres) than inactive resorts. The upper end of this range (1,750 acres) actually slightly overlaps the lower end of the range for exploitive (1,689 to 2,124 acres) and proactive (1,681 to 2,100 acres) resorts. The fact that reactive resorts are, on average, not the smallest included in this study indicates that such resorts may well be driven by regulatory pressures (i.e. compliance). Further, only one of the reactive resorts was ranked in top 29 ski resorts by skiers in the SKI Magazine survey (2010). Reactive resorts, thus, may be seen as large enough to face pressures from environmental and regulatory groups (and thus seek compliance) but lacking the “public profile” amongst skiers that might encourage development of robust SRECs.

Exploitive ski resorts and the competitive advantage paradigm.

Those in the exploitive category “exploit consumer interests in environmentally friendly products without considerations of resource characteristics, environmental ethics or a long-term perspective” (Hudson & Miller, 2005, p. 134). Of the top 29 resorts in

North America (SKI Magazine, 2010), 11 were classified as exploitive in this study.

Many of these resorts claim to prioritize environmental performance but fail to achieve positive SACC scores. Heavenly Mountain Resort (n.d.), for instance, states that they are “implementing a host of environmentally-friendly business practices designed to protect and preserve the unique natural beauty of the lands on which we ski and ride” (n.p.).

Steamboat Ski & Resort (n.d.) says that it “has developed a strong position over the past four decades to protect the environment and provide responsible stewardship” (n.p.). Mt. Ashland Ski Area (n.d.) actually states the phrase “No Greenwash” in their SREC and claimed to be “dedicated to minimizing ecological impact” and “making systematic, dedicated and sincere changes within the organization” (n.p.). These resorts, despite their statements regarding the centrality of ES, received poor scores for environmental performance from the SACC.

Ski resorts categorized as exploitive may be driven by the competitive advantage paradigm discussed by Jose and Lee (2006). The fact that 74% of exploitive resorts (compared to 46% of proactive resorts) earned A’s for prominence (meaning their SRECs existed as links at the top of their respective homepages) indicates that ski resorts in this category may explicitly be attempting to appeal to environmentally-conscious skiers and, thus, garner a competitive advantage. As noted, exploitive resorts possess a nearly identical amount of skiable area (1,689 to 2,124 acres) as proactive resorts (1,681 to 2,100 acres), supporting the notion that large, visible resorts are more likely to focus on environmental issues. A growing body of research suggests that sport participants and others willing to travel for leisure and recreation are aware of the environmental impact of their activities and may be willing to pay a premium to offset their environmental

footprint (Becken, 2007; Fairweather et al., 2005, Hudson & Ritchie, 2001; Weiss et al., 1998). This emphasizes the need for mechanisms to ensure that ski resorts are not able to unjustly develop environmental legitimacy and acquire a competitive advantage. In the context of this study, specifically, the prominence of exploitive resorts' SRECs underscores the need for an organization such as the SACC that can aid skiers in making informed decisions.

Proactive ski resorts: compliance-based or competitive advantage?

Hudson and Miller (2005) said, "The position on the model most likely to remain sustainable (and competitive) is where environmental action and environmental communication of this action is high, and these organizations are labelled as proactive" (p. 134). Nearly half of the top 29 resorts in North America (as surveyed by SKI Magazine in 2010) were in this category. The average SACC grade achieved by SKI Magazine's top 29 resorts is only marginally better than the average of the other scores (69.12% compared to 68.76%). This indicates that the larger, more visible resorts included in this study, despite being more likely to publish SRECs, do not necessarily display superior environmental performance.

Many of the SRECs published by the proactive ski resorts indicate that environmental performance is a core priority which guides decision-making. Squaw Valley's (2010) SREC includes the following quote from the resort's President and CEO: "Squaw Valley Ski Corporation and the entire Squaw Valley team are committed to being responsible environmental stewards as the mountain and our environment are absolutely central to the Squaw experience" (n.p.). Deer Valley's (n.d.) SREC says, "All ski resorts, whether on public or private land, are charged with being stewards of the

land. It's a responsibility that should not be taken lightly and we at Deer Valley certainly do not" (n.p.). The environmental communications of resorts in the proactive category are in many cases quite similar to those of resorts classified as exploitive. Proactive resorts, however, are graded highly by the SACC, indicating a degree of tangible commitment to environmental performance. Interestingly, 74% of exploitive resorts were awarded As for prominence (meaning the SREC link was a direct link at the top of the resort's homepage) whereas only 46% of proactive resorts received As for prominence. This indicates that exploitive resorts may intentionally be attempting to garner the maximum degree of "exposure" for their SRECs.

It is perhaps most difficult to determine whether proactive ski resorts are driven by compliance-based or competitive advantage paradigms. The stated motivation for environmental initiatives and disclosures need not extend beyond the anecdotal level for an organization without stockholders or a formal board of directors. The majority of the SRECs that provide some sort of justification for their environmental efforts did so with phrases such as "it is a company's duty, as a four-season mountain resort, to preserve the alpine environment" (Squaw Valley USA, 2010, n.p.). This sense of "duty" (whether for intrinsic reasons or to maintain the viability of the sport) is the overriding argument given for participating in environmental efforts.

Conceptually, proactive ski resorts may be driven by the compliance-based or competitive advantage paradigms (or both). As discussed previously, Rivera and de Leon (2004) argued that SSP participation "is related to institutional pressures in the form of enhanced federal oversight and higher state environmental demands exerted by state agencies, local environmental groups and public opinion" (p. 417). Whether or not

proactive ski resorts are moving beyond compliance is difficult to answer by analyzing the SRECs alone. One could argue that even the resorts classified as proactive may simply be attempting to sidestep impending legislation or reduce pressure by demonstrating improvement in a small number of areas (for example, offsetting all electricity usage in order to build a new lodge without outraging stakeholders). While it seems reasonable to suggest that proactive resorts care about and seek to develop environmental legitimacy, the underlying motivations remain enigmatic and require further study. Interviews with the developers and writers of the SRECs would be particularly useful in this endeavour.

Topics of Clarification

The vast majority of statements made in the SRECs fit neatly into the 11 categories outlined in the SSP Charter. Two areas of clarification, both of which relate to the SSP principle of Education and Outreach, warrant further discussion. First, a number of SRECs include information regarding how individuals could reduce their environmental impact in situations not related to the act of skiing (such as installing energy-efficient light bulbs in their homes or carpooling to work). These communications are classified as “Education and Outreach” but *not* as “Energy Conservation and Clean Energy” or “Transportation.” If the communication, however, is instead focused on the context of skiing the resort is then eligible for points in more than one category. An instructional program for employees about energy-efficiency would, thus, classify as “Education and Outreach” and “Energy Conservation and Clean Energy.” It is seen as keeping with the spirit of the SSP Charter that Education and Outreach should include a resort’s efforts to (as stated in the SSP Charter) “take a leadership role in the

environmental education in enhancing the environmental awareness of their guests, surroundings, communities, and employees” (NSAA, 2005, n.p.). The language used by the SSP Charter in the other categories, however, is much more specific to the context of skiing.

The second topic of clarification regards one of the “Options for getting there” under the Education and Outreach category. The Charter says, “Dedicate a portion of the ski area’s website to environmental excellence and Sustainable Slopes...” (NSAA, 2005, n.p.). All of the 60 resorts that publish SRECs, thus, may be seen as having earned points for both Breadth and Depth in this category. However, it was decided that the Education and Outreach category would provide more insightful and useful data if resorts were not simply automatically given credit for having published SRECs. Further, ski resorts were already credited for publishing SRECs via the prominence category which forms one-third of the grade for environmental communication.

Chapter Five: Conclusions

The purpose of this content analysis was to understand how environmental issues are socially constructed within SRECs and to compare those constructions with the actual degree of proenvironmental effort exhibited by the ski resorts. This chapter will begin with a summary of the analysis' key findings. Recommendations for improvement and possibilities for future research will also be discussed.

Key Findings

This content analysis of SRECs utilized an adaptation to classify the 82 (n=82) ski resorts graded by the SACC as inactive, reactive, exploitive, or proactive. The analysis, utilizing and adaptation of Hudson and Miller's (2005) model, found that 24% of ski resorts included in the study were inactive, 10% reactive, 23% exploitive, and 43% proactive.

SREC depth.

As was shown in Figure 11, the SRECs contained a surprising degree of depth. In sum, only 29 fewer points were awarded for depth than breadth (a difference of less than 6%). It appears that ski resorts deeming it worthwhile to publish SRECs do not take the task lightly. While proactive resorts are arguably simply using their SRECs to recount their actual environmental efforts, it is an interesting topic for consideration why exploitive resorts would also include a degree of depth. The likelihood that depth will improve the ski resort's environmental legitimacy may help explain this finding. Aerts and Cormier (2009) found that "objective, harder" environmental information was more likely to positively affect the organization's environmental legitimacy.

Importance of ski resort size and public profile.

The average size of inactive resorts (840 to 1,163 skiable acres) is approximately half of exploitive and proactive resorts (1,689 to 2,214 and 1,681 to 2,100 skiable acres, respectively). Further, only three of the top 29 ski resorts for skier satisfaction (as ranked by SKI Magazine in 2010) were classified as inactive. It appears that smaller resorts that lack a significant “public profile” may be less likely to engage in both proenvironmental efforts and environmental communications. Of the top 29 resorts (according to the 2010 SKI Magazine survey), 11 were found to be exploitive and 14 proactive. This, in addition to the significantly larger skiable area of the exploitive and reactive resorts, supports the notion that size and public profile are important factors in encouraging ski resorts to engage in environmental efforts and publish SRECs. Reactive ski resorts constitute an interesting category. Only one of SKI Magazine’s top 29 resorts was categorized as reactive, but these resorts possess an average skiable area of 1,344 to 1,750 acres (note that the upper end of this range actually overlaps the lower end of the range for exploitive and proactive resorts). It seems plausible to suggest that the size of reactive ski resorts warrants scrutiny from environmental and regulatory groups, but the lack of a significant public profile may not provide the impetus needed for the development of SRECs.

Of the 82 ski resorts included in this study, only eight are not members of the SSP. Five of these eight resorts are classified as inactive (with the three remaining non-endorsing resorts being distributed between the reactive, exploitive, and proactive categories). The average skiable area of the eight non-SSP member resorts is actually less than that of inactive resorts (719 to 938 versus 840 to 1,163 skiable acres, respectively). This insight further supports the notion that ski resort size is one of the key determinants

of how environmental issues are approached. Smaller ski resorts not only demonstrate an increased propensity towards adopting an inactive approach both in terms of environmental efforts and environmental communication, but they may also be less likely to participate in voluntary environmental programs such as the SSP.

Prominence of exploitive and proactive resorts' SRECs.

A SREC's prominence (in terms of location on the ski resort's webpage) constituted one-third of the grade for environmental communication. Interestingly, 74% of exploitive ski resorts display their SREC as a direct link at the top of their homepage but the corresponding figure for proactive resorts is only 46%. Proactive ski resorts, by definition, have both written SRECs and achieved solid environmental performance. Over half, however, fail to prominently communicate the steps they have taken to improve environmental performance, indicating many proactive resorts may be missing an opportunity to garner a competitive advantage.

Recommendations

Standardization and transparency.

According to Jose and Lee (2006), environmental disclosures have been afflicted by two primary impediments – the lack of standardization and the difficulty in communicating the information to stakeholders. While the second issue has largely been solved by the internet, the lack of standardization remains problematic. To the author's knowledge the SSP does not encourage ski resorts to structure their online environmental communications in a particular manner, but it could be argued that such standardization would improve stakeholders' ability to compare and contrast the resorts' efforts. The majority of the issues included in the SSP Charter apply to all ski resorts. Indeed, of the

11 principles included in the SSP Charter, only issues related to Wetlands and Riparian Areas may not apply to certain resorts. The SSP, thus, could easily provide a standardized format for reporting environmental efforts and encourage (or require) endorsing resorts to utilize it.

Transparency is another paramount concern. Within the context of ski resorts, transparency may be seen along several dimensions including publishing a SREC in the first place, providing the contact information of those who direct the resort's environmental activities, allowing outside organizations (such as the SACC) access, and so forth. The author of this manuscript views the standardization of the SRECs as an important first step toward transparency. To demonstrate the link between standardization and transparency consider a hypothetical project engaged in by two resorts – each plans to purchase five energy-efficient snowmaking guns. The two resorts' SRECs will likely highlight such an environmental effort. The reader, however, lacks a significant amount of important contextual information. One of the two ski areas, for instance, may be intending to use the five snowmaking guns on a new slope they plan to develop while the other resort may actually be replacing older, less efficient technology. Perhaps the first resort is simply attempting to deflect attention away from an environmentally-harmful project they intend to undertake.

A standardized format for communicating environmental efforts could attempt to differentiate between these two resorts. The standardized framework could obligate resorts to list projects that negatively impact the environment (such as clearing trees for a new slope) rather than only focusing on the positive side of the equation (as the SRECs currently do). One could argue, of course, that much of this information is available from

other sources (such as the SACC Report Cards, environmental impact statements filed with regulatory agencies, and so forth), but the overall strength and utility of the SRECs would be greatly enhanced if stakeholders could access all necessary data from a single source. Furthermore, a framework requiring both sides of the equation be adequately described is an important step in counteracting greenwashing.

Environmental management systems.

One potential solution to issues related to standardization and transparency is an environmental management system (EMS). An EMS is constituted by several components – policy, procedures and controls, communication, planning, training and education, and assessment and improvement (Williams & Todd, 1997). Williams and Todd (1997) noted that “ski area operators and the communities which surround them are faced with mounting pressures to improve their environmental performance” – pressures stemming both from “a growing body of environmental regulations” and “a more informed public” (p. 75-76). While ski resorts have adopted a multitude of environmental initiatives, these “individual programs may not be enough, however, to meet government and public standards and a more systematic and comprehensive framework may be required” (Williams & Todd, 1997, p. 76). A standardized EMS framework for the skiing industry does not currently exist. The development of such a framework would likely improve accountability and aid stakeholders in delineating one ski resort’s proenvironmental actions from another’s. Furthermore, such standardization would potentially improve the ability of independent organizations (such as the SACC) to grade ski resorts. The author of this manuscript is of the opinion that a standardized EMS framework would pave the way for improved environmental performance of the skiing

industry. Developing a uniform structure for the SRECs (potentially based on the SSP Charter) might be seen as a crucial initial step toward a standardized EMS framework. Of the elements included in an EMS (policy, procedures and controls, communication, planning, training and education, and assessment and improvement), policy and communication are perhaps the most easily standardized. Standardization in terms of policy already exists in the form of the SSP Charter, and a homogenized SREC framework based on the Charter can be easily envisioned. Note also that a standardized communication framework would not necessarily require all resorts to respond to every environmental issue. Such a framework, however, could stipulate that *if* a resort includes a particular issue in their SREC they must provide a sufficient degree of contextual information.

One may argue that the “burden of action” in improving the environmental performance of the skiing industry should be carried by the ski resorts, skiers, or relevant policymaking and regulatory institutions. While it is beyond the scope of this manuscript to determine who should shoulder the burden of action, note that in all cases a transparent and standardized EMS would aid decision-making. Such an EMS would allow ski resorts to better manage their environmental impact and compare their performance with their competitors, it would allow skiers to make more informed choices, and it would assist institutions in developing regulations and policies for the skiing industry. As quoted by the Alta Ski Area (n.d.), “Transparency is vital in this struggle, for learning from what others have done – and equally from our mistakes – will allow continual growth and progress towards sustainability” (n.p.).

Possibilities for Future Research

Several potential directions of future research have been brought forward throughout this manuscript. Two areas of inquiry may prove particularly interesting – one focused on the supply side of the equation and the other on the demand side. In the author's opinion, the primary unanswered question is the motivation behind ski resorts publishing environmental communications. The majority of the SRECs analyzed in this study contain a surprising degree of depth. Researching and writing these SRECs constitutes a significant organizational investment. It remains unclear, however, whether the ski resorts are seeking to comply with regulations and sidestep scrutiny or garner a competitive advantage. Note that the third possibility – that ski resorts view their proenvironmental efforts as intrinsically worthwhile and in need of no further justification – does not explain why the resorts would expend the effort to communicate such endeavours. Interviews with key organizational members from the ski resorts would prove insightful in uncovering the motivation behind the SRECs. Such interviews could be compared with how the SRECs are interpreted by relevant stakeholders (such as skiers, regulatory bodies, and environmental groups) to determine the congruency between the ski resorts actual motivations and the public's perception of the justifications behind the SRECs.

The second possibility for future studies relates to the construction of the SRECs themselves. Such a study would attempt to elucidate the most effective wording and presentation of SRECs. Questions related to the relative impact of “hard” and “soft” data, for instance, could be investigated. This study would be insightful regardless of whether ski resorts are driven by compliance or seeking a competitive advantage. In the former

case, the researcher could interview regulatory bodies and environmental groups to determine their reaction to the SRECs depending on several variables (degree of specificity, breadth of issues covered, and so forth). If a competitive advantage is the ski resort's primary goal, research focused on skiers would be insightful. This study could investigate the effect of the SRECs on proenvironmental behaviours (see the section "Factors that Encourage or Inhibit Proenvironmental Behaviour" in the Literature Review). The likelihood of skiers being willing to pay a premium for a more environmentally-friendly resort and how the SRECs might shape their decision to do so could also be analyzed.

References

- Albo, G. (2002). Neoliberalism, the State, and the left: A Canadian perspective. *Monthly Review*, 54(1), 46-55.
- Allen, E. J. B. (1985). Values and Sport: The Development of New England Skiing, 1870-1940. *The Oral History Review*, 13, 55-76.
- Aerts, W., & Cormier, D. (2009). Media legitimacy and corporate environmental communication. *Accounting, Organizations and Society*, 34(1), 1-27.
- Ali, M., & Rafiqul Hoque, a T. M. (2008). Shifting regime shifted policy—interplay of interests in sustainability discourses of forest land use. *Mitigation and Adaptation Strategies for Global Change*, 14(2), 121-134.
- Anguita, P., Alonso, E., & Martín, M. (2008). Environmental economic, political and ethical integration in a common decision-making framework. *Journal of Environmental Management*, 88(1), 154-164.
- Auger, P., Devinney, T., Louviere, J., & Burke, P. (2008). Do social product features have value to consumers? *International Journal of Research in Marketing*, 25(3), 183-191.
- Babiak, K., & Wolfe, R. (2006). More Than Just a Game? Corporate Social Responsibility and Super Bowl XL. *Sport Marketing Quarterly*, 15(4), 214-222.
- Bamberg, S., & Moser, G. (2007). Twenty years after Hines, Hungerford, and Tomera: A new meta-analysis of psycho-social determinants of pro-environmental behaviour. *Journal of Environmental Psychology*, 27(1), 14-25.

- Bansal, P., & Gao, J. (2006). Building the Future by Looking to the Past: Examining Research Published on Organizations and Environment. *Organization & Environment*, 19(4), 458-478.
- Barton, G. (2001). Empire forestry and the origins of environmentalism. *Journal of Historical Geography*, 27(4), 529-552.
- Becken, S. (2007). Tourists' Perception of International Air Travel's Impact on the Global Climate and Potential Climate Change Policies. *Journal of Sustainable Tourism*, 15(4), 351-368.
- Bord, R. J., O'Connor, R. E., & Fisher, A. (2000). In what sense does the public need to understand global climate change? *Public Understanding of Science*, 9, 205-218.
- Boucher, R. L. (1998). Toward achieving a focal point for sport management: a binocular perspective. *Journal of Sport Management*, 12(1), 76-85.
- Brymer, E., Downey, G., & Gray, T. (2009). Extreme Sports as a Precursor to Environmental Sustainability. *Journal of Sport & Tourism*, 14(2), 193-204.
- Burki, R., Elsasser, H., & Abegg, B. (2003). Climate Change and Winter Sports: Environmental and Economic Threats. *5th World Conference on Sport and Environment*. Turin, Italy.
- Burningham, K., & Cooper, G. (1999). Being Constructive: Social Constructionism and the Environment. *Sociology*, 33(2), 297-316.
- Buttel, F. H. (2003). Environmental Sociology and the Explanation of Environmental Reform. *Organization & Environment*, 16(3), 306-344.

- Cantelon, H., & Letters, M. (2000). The making of the IOC environmental policy as the third dimension of the Olympic Movement. *International Review for the Sociology of Sport*, 35(3), 294-308.
- Chesshyre, T. (2005, October). Too hot to ski? *Geographical*, 69-72.
- Coleman, A. (1996). The Unbearable Whiteness of Skiing. *Pacific Historical Review*, 65(4), 583-614.
- Collins, A., Flynn, A., Munday, M., & Roberts, A. (2007). Assessing the Environmental Consequences of Major Sporting Events: The 2003/04 FA Cup Final. *Urban Studies*, 44(3), 457-476.
- Collins, A., & Flynn, A. (2005). A new perspective on the environmental impacts of planning: A case study of Cardiff's International Sports Village. *Journal of Environmental Policy & Planning*, 7(4), 277-302.
- Collins, A., Jones, C., & Munday, M. (2009). Assessing the environmental impacts of mega sporting events: Two options? *Tourism Management*, 30(6), 828-837.
- Cornelissen, G., Pandelaere, M., Warlop, L., & Dewitte, S. (2008). Positive cueing: Promoting sustainable consumer behavior by cueing common environmental behaviors as environmental. *International Journal of Research in Marketing*, 25(1), 46-55.
- Dawson, J., Stewart, E., Lemelin, H., & Scott, D. (2010). The carbon cost of polar bear viewing tourism in Churchill, Canada. *Journal of Sustainable Tourism*, 18(3), 319-336.

- Du, S., Bhattacharya, C. B., & Sen, S. (2007). Reaping relational rewards from corporate social responsibility: The role of competitive positioning. *International Journal of Research in Marketing*, 24(3), 224-241.
- Duncan, M. C. (1993). Beyond Analyses of Sport Media Texts: An Argument for Formal Analyses of Institutional Structures. *Sociology of Sport Journal*, 10, 353-372.
- Elgin, B. (2007, October 29). Little Green Lies. *BusinessWeek*, 1-6.
- Fairley, S., Tyler, B. D., Kellett, P., & D'Elia, K. (2011). The Formula One Australian Grand Prix: Exploring the triple bottom line. *Sport Management Review*, 14, 141-152.
- Fairweather, J., Maslin, C., & Simmons, D. (2005). Environmental Values and Response to Ecolabels Among International Visitors to New Zealand. *Journal of Sustainable Tourism*, 13(1), 82-98.
- Falt, E. (2006). Sport and the Environment. *Environmental Health Perspectives*, 114(5), 268-296.
- Fenton, W. (2010). Using sponsorship to drive environmental awareness and change. *Journal of Sponsorship*, 3(2), 124-130.
- Fitzmaurice, J. (2005). Moving towards action: How consumers think about a new behavior. *Marketing Management Journal*, 15(1), 81 - 94.
- Formenti, F., Ardigò, L. P., & Minetti, A. E. (2005, August 7). Human locomotion on snow: determinants of economy and speed of skiing across the ages. *Proceedings. Biological Sciences*, 272(1572), 1561-1569.
- Fyall, A., & Jago, L. (2009). Sustainability in Sport & Tourism. *Journal of Sport & Tourism*, 14(2), 77-81.

- George, A. (2004). Managing ski resorts: the National Ski Areas Association (NSAA) of the United States' 2001 and 2002 Annual Progress Reports on the Environmental Charter and the reaction from conservations groups. *Managing Leisure*, 9(1), 59-67.
- Ghobadian, A., Viney, H., James, P., & Lui, J. (1995). The influence of environmental issues in strategic analysis and choice: a review of environmental strategy among top UK corporations. *Management Decision*, 33(10), 46-58.
- Grainger, N. (2009). *Virgin London Marathon Sustainability Report*. London, U.K.: Virgin London Marathon.
- Greenpeace. (2009, September 14). *The history of Greenpeace*. Retrieved March 28, 2011 from: <http://www.greenpeace.org/international/en/about/history/>.
- Hamilton, L. C., Rohall, D. E., Brown, B. C., Hayward, G. F., & Keim, B. D. (2003). Warming Winters and New Hampshire's Lost Ski Areas: An Integrated Case Study. *International Journal of Sociology and Social Policy*, 23(10), 52-73.
- Holden, A. (2000). Winter tourism and the environment in conflict: the case of Cairngorm, Scotland. *International Journal of Tourism Research*, 2(4), 247-260.
- Hong, S. Y., Yang, S., & Rim, H. (2010). The influence of corporate social responsibility and customer-company identification on publics' dialogic communication intentions. *Public Relations Review*, 36, 196-198.
- Howard-Grenville, J. A. (2006). Inside the "Black Box:" How Organizational Culture and Subcultures Inform Interpretations and Actions on Environmental Issues. *Organization & Environment*, 19(1), 46-73.

- Hudson, S. (1996). The “greening” of ski resorts: a necessity for sustainable tourism, or a marketing opportunity for skiing communities? *Journal of Vacation Marketing*, 2(2), 176-185.
- Hudson, S., & Miller, G. (2005). The responsible marketing of tourism: the case of Canadian Mountain Holidays. *Tourism Management*, 26(2), 133-142.
- Hudson, S., & Ritchie, J. R. B. (2001). Cross-cultural tourist behavior: An analysis of tourist attitudes towards the environment. *Journal of Travel & Tourism Marketing*, 10(2), 1-22.
- Hums, M. A. (2010). The Conscience and Commerce of Sport Management: One Teacher’s Perspective. *Journal of Sport Management*, 24, 1-9.
- International Olympic Committee (IOC). (2009). *IOC Guide to Sport, Environment and Sustainable Development*. Retrieved from <http://www.olympic.org/en/content/Footer-Pages/Documents/Olympism-in-action/>.
- James, P., Ghobadian, A., Viney, H., & Liu, J. (1999). Addressing the divergence between environmental strategy formulation and implementation. *Management Decision*, 37(4), 338-347.
- Jansson, J., Marell, A., & Nordlund, A. (2010). Green consumer behavior: determinants of curtailment and eco-innovation adoption. *Journal of Consumer Marketing*, 27(4), 358-370.
- Jong, C. D. (2007, August 8). *Artificial snow drains mountain resources*. environmentalresearchweb. Retrieved November 23, 2010 from: <http://environmentalresearchweb.org/cws/article/opinion/30703>.

- Jose, A., & Lee, S. M. (2006). Environmental Reporting of Global Corporations: A Content Analysis based on Website Disclosures. *Journal of Business Ethics*, 72(4), 307-321.
- Klenosky, D., Gengler, C., & Mulvey, M. (1993). Understanding the Factors Influencing Ski Destitution Choice: A Means-End Analytic Approach. *Journal of Leisure Research*, 25(4), 362-379.
- Kollmuss, A., & Agyeman, J. (2002). Mind the Gap: why do people act environmentally and what are the barriers to pro-environmental behavior?. *Environmental Education Research*, 8(3).
- Kim, D., Nam, Y., & Kang, S. (2010). An analysis of corporate environmental responsibility on the global corporate Web sites and their dialogic principles. *Public Relations Review*, 36, 285-288.
- Krippendorff, K. (2004). Content Analysis: An Introduction to Its Methodology (2nd ed.). Thousand Oaks, California: Sage Publications, Inc.
- Kurz, T., Donaghue, N., Rapley, M., & Walker, I. (2005). The ways that people talk about natural resources: discursive strategies as barriers to environmentally sustainable practices. *The British Journal of Social Psychology*, 44, 603-620.
- Labonte, R. (2004). Social inclusion/exclusion: dancing the dialectic. *Health Promotion International*, 19(1), 115-121.
- Laing, J., & Frost, W. (2010). How green was my festival: Exploring challenges and opportunities associated with staging green events. *International Journal of Hospitality Management*, 29(2), 261-267.

- Lee, K., & Shin, D. (2010). Consumers' responses to CSR activities: The linkage between increased awareness and purchase intention. *Public Relations Review*, 36, 193-195.
- Lenskyj, H. J. (1998). Sport and Corporate Environmentalism: The Case of the Sydney 2000 Olympics. *International Review for the Sociology of Sport*, 33(4), 341-354.
- Lesjø, J. H. (2000). Lillehammer 1994: Planning, Figurations and the "Green" Winter Games. *International Review for the Sociology of Sport*, 35(3), 282-293.
- Lund, M. (1996, Winter). A Short History of Alpine Skiing. In *Skiing Heritage (Vol. 8, Num. 1)*. Retrieved April 4, 2011 from <http://www.skiinghistory.org/history.html>.
- Lund, M. & Masia, S. (2003). A short history of skis. In *International Skiing History Association*. Retrieved April 4, 2011 from <http://www.skiinghistory.org/skishistory.html>.
- Mallen, C., Adams, L., Stevens, J., & Thompson, L. (2010b). Environmental Sustainability in Sport Facility Management: A Delphi Study. *European Sport Management Quarterly*, 10(3), 367-389.
- Mallen, C., & Chard, C. (2011). A framework for debating the future of environmental sustainability in the sport academy. *Sport Management Review*, 14, 424-433.
- Mallen, C., Stevens, J., & Adams, L. (2011). A content analysis of environmental sustainability research in sport management literature. *Journal of Sport Management*, 25(3), 240-256.
- Mallen, C., Stevens, J., Adams, L., & McRoberts, S. (2010a). The Assessment of the Environmental Performance of an International Multi-Sport Event. *European Sport Management Quarterly*, 10(1), 97-122.

- Manring, S. L. (2007). Creating and Managing Interorganizational Learning Networks To Achieve Sustainable Ecosystem Management. *Organization & Environment*, 20(3), 325-346.
- McCrary, P. (2006). Take nothing but pictures, leave nothing but footprints? *British Journal of Sports Medicine*, 40(7), 565.
- McGrew, A. (1990). The political dynamics of the new environmentalism. *Organization & Environment*, 4(4), 291-305.
- McKenzie-Mohr, D. (2000). Fostering Sustainable Behavior Through Community-Based Social Marketing. *American Psychologist*, 55(5), 531-537.
- Moen, J., & Fredman, P. (2007). Effects of Climate Change on Alpine Skiing in Sweden. *Journal of Sustainable Tourism*, 15(4), 418-437.
- Montiel, I. (2008). Corporate Social Responsibility and Corporate Sustainability: Separate Pasts, Common Futures. *Organization & Environment*, 21(3), 245-269.
- Moon, S., & deLeon, P. (2007). Contexts and Corporate Voluntary Environmental Behaviors: Examining the EPA' s Green Lights Voluntary Program. *Organization & Environment*, 20(4), 480-496.
- MountainVertical.com. (2011). *Comparison of the Biggest US/Canada Ski Resorts*. Retrieved October 1, 2011 from <http://mountainvertical.com/>.
- Murphy, R. (2004). Disaster or Sustainability: The Dance of Human Agents with Nature's Actants. *Canadian Review of Sociology and Anthropology*, 41(3), 249-266.
- National Ski Areas Association (NSAA). (2005). *Sustainable Slopes: The environmental charter for ski resorts*. Retrieved March 17, 2011 from http://www.nsaa.org/nsaa/environment/sustainable_slopes/Charter.pdf.

- National Ski Areas Association (NSAA). (2010). Retrieved November 29, 2010 from <http://www.nsaa.org>.
- Nauright, J., & Pope, S. (2009). Introduction. In J. Nauright and S. Pope (Eds.), *The New Sport Management Reader* (p. xvii-xxv). Morgantown, West Virginia: Fitness Information Technology.
- Nilsson, A., Von Borgstede, C., & Biel, A. (2004). Willingness to accept climate change strategies: The effect of values and norms. *Journal of Environmental Psychology*, 24, 267-277.
- Nordlund, a M., & Garvill, J. (2002). Value Structures behind Proenvironmental Behavior. *Environment and Behavior*, 34(6), 740-756.
- O'Connor, A., & Meister, M. (2008). Corporate social responsibility attribute rankings. *Public Relations Review*2, 34, 49-50.
- O'Connor, R. E., Bord, R. J., & Fisher, A. (1999). Risk Perceptions, General Environmental Beliefs, and Willingness to Address Climate Change. *Risk Analysis*, 19(3), 461-471.
- Orchard, R., & Webb, M. (2005, November 20). Ski in the desert? It could only happen in Dubai. *The Observer*.
- Paehlke, R. (2000). Environmentalism in One Country: Canadian Environmental Policy in an Era of Globalization. *Policy Studies Journal*, 28(1), 160-175.
- Paquette, J., Stevens, J., & Mallen, C. (2011). The interpretation of environmental sustainability by the International Olympic Committee and Organizing Committees of the Olympic Games from 1994 to 2008. *Sport in Society*, 14(3), 355-369.

- Patton, M. Q. (2002). *Qualitative Research and Evaluation Methods* (3rd ed.). Thousand Oaks, California: Sage Publications, Inc.
- Pickering, C. M., Castley, J. G., & Burt, M. (2009). Skiing Less Often in a Warmer World: Attitudes of Tourists to Climate Change in an Australian Ski Resort. *Geographical Research*, 48(2), 137-147.
- Pitter, R. (2009). Finding the Kieran Way: Recreational Sport, Health, and Environmental Policy in Nova Scotia. *Journal of Sport & Social Issues*, 33(3), 331-351.
- Plumptre, T., & Graham, J. (2000, January). *Governance in the New Millennium: Challenges for Canada. The Institute on Governance* (pp. 1-15). Ottawa, Ontario, Canada.
- Quester, P. (2006). Brand-Personal Values Fit and Brand Meanings: Exploring the Role Individual Values Play in Ongoing Brand Loyalty in Extreme Sports Subcultures. *Advances in Consumer Research*, 33, 21-27.
- Raghubir, P., Roberts, J., Lemon, K. N., & Winer, R. S. (2010). Why, When, and How Should the Effect of Marketing Be Measured? A Stakeholder Perspective for Corporate Social Responsibility Metrics. *Journal of Public Policy & Marketing*, 29(1), 66-77.
- Rivera, J., & de Leon, P. (2004). Is Greener Whiter? Voluntary Environmental Performance of Western Ski Areas. *The Policy Studies Journal*, 32(3), 417-437.
- Rivera, J., de Leon, P., & Koerber, C. (2006). Is Greener Whiter Yet? The Sustainable Slopes Program after Five Years. *The Policy Studies Journal*, 34(2), 195-221.
- Roper, T. (2006). Producing environmentally sustainable Olympic Games and “greening” major public events. *Global Urban Development*, 2(1), 1-5.

- Sadowski, M. (2011, February). *Rate the Raters* Phase Three: Uncovering Best Practices (pp. 1-34). *SustainAbility*.
- Sahlins, M. (2004). *Stone Age Economics* (2nd ed.). London, England: Routledge.
- Saint-Martin, D. (2007). From the Welfare State to the Social Investment State: A New Paradigm for Canadian Social Policy? In M. Orsini & M. Smith (Eds.), *Critical Policy Studies* (pp. 279-298). Vancouver, BC: UBC Press.
- Schiermeier, Q. (2004, September 16). Ecologists mount protest over lofty plans for Alpine ski runs. *Nature*, 431, 235.
- Schmidt, C. W. (2006). Putting the Earth in Play. *Environmental Health Perspectives*, 114(5), 286-295.
- Scott, D., & Becken, S. (2010). Adapting to climate change and climate policy: progress, problems and potentials. *Journal of Sustainable Tourism*, 18(3), 283-295.
- Scott, D., & Jones, B. (2006). The Impact of Climate Change on Golf Participation in the Greater Toronto Area (GTA): A Case Study. *Journal of Leisure Research*, 38(3), 363-380.
- Scott, D., McBoyle, S., & Mills, B. (2002). A Reassessment of Climate Change and the Skiing Industry in Southern Ontario (Canada): Exploring Technical Capacity. *Proceedings of the 16th International Congress on Biotechnology*. Kansas City, USA.
- Sharma, A., Iyer, G. R., Mehrotra, A., & Krishnan, R. (2010). Sustainability and business-to-business marketing: A framework and implications. *Industrial Marketing Management*, 39(2), 330-341.

- SKI Magazine. (2010). The 2010 Reader Resort Survey. *SKI Magazine*. Retrieved from <http://www.skinet.com/ski/mountain-life/dining/2009/10/the-2010-reader-resort-survey>.
- Ski Area Citizens' Coalition (SACC) (2010). Retrieved November 29, 2010 from <http://www.skiareacitizens.com/>.
- Slack, T. (1996). From the Locker Room to the Board Room: Changing the Domain of Sport Management. *Journal of Sport Management*, 10(1), 97-105.
- Steelman, T. A., & Rivera, J. (2006). Voluntary Environmental Programs in the United States: Whose Interests are Served? *Organization & Environment*, 19(4), 505-526.
- Stepchenkova, S., Kirilenko, A. P., & Morrison, A. M. (2008). Facilitating Content Analysis in Tourism Research. *Journal of Travel Research*, 47(4), 454-469.
- Stern, P. C. (2000). Toward a Coherent Theory of Environmentally Significant Behavior. *The Society for the Psychological Study of Social Issues*, 56(3), 407-424.
- Stoddart, M. C. J. (2008). Making meaning out of mountains: skiing, the environment and eco-politics (Doctoral dissertation). Retrieved from <http://en.scientificcommons.org/46175340>.
- Stokowski, P. (2002). Languages of Place and Discourses of Power: Constructing New Senses of Place. *Journal of Leisure Research*, 34(4), 368-382.
- Stubbs, W., & Cocklin, C. (2008). Conceptualizing a "Sustainability Business Model." *Organization & Environment*, 21(2), 103-127.
- Taylor, C. R. (2010). Editorial: Integrated Marketing Communications in 2010 and Beyond. *International Journal of Advertising*, 29(2), 161-164.

- Thibault, L. (2009). Globalization of Sport: An Inconvenient Truth. *Journal of Sport Management*, 23, 1-20.
- Thompson, J., Hutson, G., & Davidson, J. (2008). A case study on environmental perspectives of boulderers and access issues at the Niagara Glen Nature Reserve. *Australian Journal of Outdoor Education*, 12(2), 24-31.
- U.S. Green Building Council. (n.d.). What LEED Is. Retrieved July 31, 2011 from <http://www.usgbc.org>.
- United Nations (UN). (2010). *United Nations environmental programme: Sport and environment*. Retrieved November 23, 2010 from: http://www.unep.org/sport_env/.
- United Nations Brundtland Report (1987). 96th Plenary meeting, United Nations General Assembly, Report to the World Commission on the Environment and Development. Retrieved December 16, 2010 from <http://www.un-documents.net/wced-ocf.htm>.
- Vancouver Organizing Committee for the 2010 Olympic and Paralympic Winter Games & International Academy of Sport Science and Technology (Vancouver 2010 & AISTS). (2009). *Sustainable Sport and Event Toolkit*. London, England.
- Walker, G. (2005). Sociological theory and the natural environment. *History of the Human Sciences*, 18(1), 77-106.
- Weiss, O., Norden, G., Hilscher, P., & Vanreusel, B. (1998). Ski Tourism and Environmental Problems: Ecological Awareness among Different Groups. *International Review for the Sociology of Sport*, 33(4), 367-379.
- Wheeler, K., & Nauright, J. (2006). A Global Perspective on the Environmental Impact of Golf. *Sport in Society*, 9(3), 427-443.

- Whitmarsh, L. (2009). Behavioural responses to climate change: Asymmetry of intentions and impacts. *Journal of Environmental Psychology*, 29(1), 13-23.
- Williams, P. W., & Todd, S. E. (1997). Towards an Environmental Management System for Ski Areas. *Mountain Research and Development*, 17(1), 75-90.
- Winter, D. D. N. (2000). Some Big Ideas for Some Big Problems. *American Psychologist*, 55(5), 516-522.
- Young, R. D. (2000). Expanding and Evaluating Motives for Environmentally Responsible Behavior. *Journal of Social Issues*, 56(3), 509-526.
- Zdravkovic, S., Magnusson, P., & Stanley, S. M. (2010). Dimensions of fit between a brand and a social cause and their influence on attitudes. *International Journal of Research in Marketing*, 27, 151-160.
- Zeigler, E. F. (2007). Sport Management Must Show Social Concern as It Develops Tenable Theory. *Journal of Sport Management*, 21, 297-318.

Ski Resort Website References

The ski resort websites referenced below were all accessed on May 23, 2011. For those ski resorts that publish environmental communications the reference includes the date (if available), the title, and the link for the environmental communication. For those ski resorts without environmental communications the link is for the resort's homepage.

49° North Mountain Resort. (2011). <http://www.ski49n.com>.

Alpine Meadows. (n.d.). One Planet. <http://www.skialpine.com/mountain/one-planet>.

Alta Ski Area. (n.d.). Alta Environmental Center. <http://www.altaence.com/>.

Arapahoe Basin. (n.d.). Environmental Awareness.

<http://www.arapahoebasin.com/ABasin/about/environment/default.aspx>.

Arizona Snowbowl. (n.d.). Company Information.

http://www.arizonasnowbowl.com/resort/summer_company_information.php.

Aspen/Snowmass (includes Aspen Mountain Ski Resort, Aspen Highlands Ski Resort,

Buttermilk Mountain Ski Resort, and Snowmass Ski Resort). (n.d.). Overview.

<http://www.aspensnowmass.com/environment/>.

Bear Mountain. (n.d.). <http://www.bearmountain.com>.

Bear Valley Mountain Resort (n.d.) Environment. [http://www.bearvalley.com/the-](http://www.bearvalley.com/the-mountain/environmental-management/)

[mountain/environmental-management/](http://www.bearvalley.com/the-mountain/environmental-management/).

Beaver Creek Resort. (n.d.). Environment.

<http://www.beavercreek.com/the-resort/environment/environment.aspx>.

Big Sky Resort. (n.d.). Environmental Stewardship.

<http://www.bigskyresort.com/Stewardship/index.asp>.

Boreal Mountain Resort. (n.d.). Be Green.

http://www.rideboreal.com/winter/green_page/green.html.

Breckenridge Ski Resort. (n.d.). Breckenridge Environment.

<http://www.breckenridge.com/mountain/environment.aspx>.

Brian Head Resort. (2011). <http://www.brianhead.com/>.

Bridger Bowl. (n.d.). Sustainability Initiative.

<http://bridgerbowl.com/extras/sustainability/>.

Brighton Resort. (2011). Environment.

<http://www.brightonresort.com/mountain.environment.html>.

Brundage Mountain Resort (2009). Sustainability at Brundage.

<http://www.brundage.com/about-brundage/sustainability-at-brundage/>.

The Canyons Resort. (2011). Environmental Commitment.

<http://www.thecanyons.com/environment.html>.

China Peak Mountain Resort. (n.d.). Green Statement.

<http://www.skichinapeak.com/green.aspx>.

Copper Mountain. (n.d.). Copper Mountain Environmental Commitment.

<http://www.coppercolorado.com/winter/about/environment>.

Crested Butte Mountain Resort. (n.d.). About Crested Butte.

<http://www.skicb.com/cbmr/town/about-crested-butte.aspx>.

Crystal Mountain. (2011). Environment.

<http://www.crystallmountainresort.com/The-Mountain/Environment>

Deer Valley Resort. (n.d.). Environmental Commitment.

http://www.deervalley.com/about_deervalley/environmental_commitment.html.

Dodge Ridge. (2010, October 28). Environmental Efforts.

http://www.dodgeridge.com/site/environmental_efforts.php.

Durango Mountain Resort. (n.d.). Environmental Initiatives.

<http://www.durangomountainrealty.com/resort/environmental-initiatives.html>.

Heavenly Mountain Resort. (n.d.). Heavenly Environmental Awareness.

<http://www.skiheavenly.com/the-mountain/environment.aspx>.

Homewood Mountain Resort. (n.d.). <http://www.skihomewood.com>.

Jackson Hole Mountain Resort. (2011). Jackson Hole Mountain Resort's Commitment to the Environment. <http://www.jacksonhole.com/mountain-info/environment.html>.

Keystone Resort (n.d.). Environmental Initiatives.

<http://www.keystonerestort.com/explore-keystone/environmental-initiatives.aspx>.

Kirkwood Mountain Resort. (n.d.). Environmental Stewardship & Sustainability.

<http://www.kirkwood.com/site/environmental>.

Las Vegas Ski & Snowboard Resort. (n.d.). Green Initiatives.

http://www.skilasvegas.com/winter/mountain_info/environment/index.html.

Lost Trail Powder Mountain. (n.d.). <http://www.lostrail.com/>.

Loveland Ski Area. (n.d.). <http://www.skiloveland.com>.

Mammoth Mountain Ski Area. (n.d.). Environmental Commitment.

<http://www.mammothmountain.com/CorporateHome/Environment/>.

Mission Ridge Ski & Snowboard Resort. (2011). Environment.

<http://www.missionridge.com/your-mountain/about-mission/environment.html>.

Monarch Mountain. (n.d.). Environmental Policies.

<http://www.skimonarch.com/index.php/monarch-community/environmental-policies>.

Moonlight Basin (n.d.). Environmental Stewardship & Conservation.

http://www.moonlightbasin.com/site/environ_conservation.html.

Mountain High Resort. (n.d.). <http://www.mthigh.com>.

Mt. Ashland Ski Area. (n.d.). Environmental Programs.

<http://www.mtashland.com/Page.asp?NavID=208>.

Mt. Bachelor Ski Resort. (n.d.). Environmental Program.

http://www.mtbachelor.com/site/info/environmental_program.

Mt. Baker Ski Area. (2011). <http://www.mtbaker.us/1011/>

Mt. Hood Meadows Ski Resort. (n.d.). Environment.

<http://www.skihood.com/About-Meadows/Environment>.

Mt. Rose. (n.d.). Sustainable Slopes.

http://www.mtrose.com/index.php?option=com_content&view=article&id=13&Itemid=72.

Mt. Shasta Ski Park. (n.d.). Environment. <http://skipark.com/the-mountain/environment>.

Mt. Spokane Ski & Snowboard Park. (2011). <http://www.mtspokane.com>.

Northstar-at-Tahoe Resort. (n.d.). Our Environment.

<http://www.northstarattahoe.com/info/ski/media/environment.asp?category=environment>

Park City Mountain Resort. (n.d.). Save Our Snow.

<http://saveoursnow.net/site/index.html>.

- Pebble Creek Ski Area. (n.d.). <http://www.pebblecreekskiarea.com/>.
- Powderhorn. (n.d.). Environmental. <http://www.powderhorn.com/environmental>.
- Red Lodge Mountain Resort (n.d.). <http://www.redlodgemountain.com>.
- Red River Ski Area. (n.d.). <http://www.redriverskiarea.com/>.
- Sadowski, M. (2011, February). *Rate the Raters* Phase Three: Uncovering Best Practices (pp. 1-34). *SustainAbility*.
- Schweitzer Mountain Resort. (n.d.). Environment.
<http://www.schweitzer.com/mountain/our-values/environment>.
- Sierra-at-Tahoe. (n.d.). Our Environment. <http://www.sierraattahoe.com/about-us/environment>.
- Silver Mountain Resort. (n.d.). <http://www.silvermt.com/>.
- Ski Apache. (n.d.). <http://www.skiapache.com/>.
- Ski Santa Fe. (n.d.). <http://www.skisantafe.com/>.
- Snowbasin Resort. (2011). <http://www.snowbasin.com>.
- Snowbird Ski & Summer Resort. (n.d.). Snowbird's Commitment to a Greener Planet.
<http://www.snowbird.com/environment/index.html>.
- Snow Summit Mountain Resort. (n.d.). <http://www.snowsummit.com>
- Snow Valley Mountain Resort. (n.d.). Environment.
<http://www.snow-valley.com/environment.html>.
- Solitude Mountain Resort. (2011). <http://www.skisolitude.com>.
- Squaw Valley USA. (2010, October, 11). Environmental Efforts.
<http://www.squaw.com/press-release/environmental-efforts>.

Steamboat Ski & Resort. (n.d.). Environmental Commitment.

<http://www.steamboat.com/mountain/environment.aspx>.

Stevens Pass. (2011). Green Commitment.

<http://www.stevenspass.com/Stevens/the-mountain/environment.aspx>.

Sugar Bowl. (n.d.). Environment. <http://www.sugarbowl.com/Environment>.

Sun Valley Resort (n.d.). Environmental Awareness.

<http://www.sunvalley.com/footer/about/#/environmental-awareness/>.

Sundance Resort. (n.d.). Conserve. <http://www.sundanceresort.com/conserve.html>.

Taos Ski Valley. (n.d.). Green Initiatives. <http://www.skitaos.org/content/green-initiatives>.

Telluride Ski Resort. (n.d.). Environmental Initiatives.

<http://tellurideskiresort.com/TellSki/info/summer/environmental-initiatives.aspx>.

The Summit at Snoqualmie. (2011). Environment.

<http://www.summitatsnoqualmie.com/Mountains/Environment>.

Timberline Lodge and Ski Area. (n.d.). Sustainability.

<http://www.timberlinelodge.com/sustainability/>.

Vail Mountain. (n.d.). Environment. <http://www.vailresortsecho.com/>.

White Pass Ski Area. (2011). <http://www.skiwhitepass.com>.

Whitefish Mountain Resort. (n.d.). <http://skiwhitefish.com/>.

Winter Park Resort. (n.d.). About Connexion.

<http://www.winterparkresort.com/mountain/environment/index.htm>.

Wolf Creek Ski Area. (n.d.). Environmental Policies. <http://www.wolfcreekski.com/wolf-creek-environmental.php>.

Appendix A: Ski Resorts Included in the Study

Ski Area	SACC Grade	SSP?	SREC?	Prom.	Breadth	Depth	SREC Grade
Arizona							
Arizona Snowbowl	51.9% (D)	Yes	No	D	D	D	D
California							
<i>Squaw Valley USA (#8)</i>	89.2% (A)	Yes	Yes	B	B	B	B
<i>Alpine Meadows Ski Area (#30)</i>	86.2% (A)	Yes	Yes	A	B	D	B
Sugar Bowl Ski Resort	80.0% (A)	Yes	Yes	B	A	A	A
Boreal Mountain Resort	78.7% (A)	Yes	Yes	B	B	B	B
Kirkwood Mountain Resort	77.5% (B)	Yes	Yes	B	A	B	B
Homewood Mountain Resort	77.4% (B)	Yes	Yes	A	A	A	A
<i>Sierra-at-Tahoe Ski Resort (#16)</i>	73.7% (B)	Yes	Yes	A	A	A	A
<i>Mammoth Mountain Ski Area (#9)</i>	73.3% (B)	Yes	Yes	B	A	A	A
Mountain High Resort	69.6% (B)	Yes	No	D	D	D	D
Dodge Ridge	68.3% (B)	Yes	Yes	A	C	C	B
Mt. Shasta Board & Ski Park	68.3% (B)	Yes	Yes	B	D	D	C
Bear Valley Mountain Resort	67.3% (C)	Yes	Yes	A	A	A	A
Snow Summit Mountain Resort	67.2% (C)	Yes	No	D	D	D	D
Northstar-at-Tahoe	66.5% (C)	Yes	Yes	C	A	A	B
China Peak	66.1% (C)	Yes	Yes	A	B	B	B
Bear Mountain Resort	65.2% (C)	Yes	No	D	D	D	D
Snow Valley Mountain Resort	63.9% (C)	No	Yes	B	C	C	C
<i>Heavenly Mountain Resort (#13)</i>	59.7% (C)	Yes	Yes	A	A	A	A
Colorado							
<i>Aspen Mountain Ski Resort (#14)</i>	84.3% (A)	Yes	Yes	B	A	A	A
<i>Aspen Highlands Ski Resort (#17)</i>	84.0% (A)	Yes	Yes	B	A	A	A
Buttermilk Mountain Ski Resort	83.9% (A)	Yes	Yes	B	A	A	A
Wolf Creek Ski Area	79.5% (A)	Yes	Yes	A	A	A	A
Powderhorn Resort	78.7% (A)	Yes	Yes	A	C	C	B
<i>Crested Butte Mountain Resort (#24)</i>	76.0% (B)	Yes	Yes	C	D	D	D
<i>Snowmass Ski Resort (#6)</i>	75.2% (B)	Yes	Yes	B	A	A	A
Loveland Ski Area	73.0% (B)	Yes	No	D	D	D	D
<i>Telluride Ski Resort (#11)</i>	70.6% (B)	Yes	Yes	B	A	A	A
<i>Vail Ski Resort (#3)</i>	69.2% (B)	Yes	Yes	C	A	A	B

Monarch Ski and Snowboard	68.6% (B)	Yes	Yes	A	B	B	B
Durango Mountain Resort	68.5% (B)	Yes	Yes	C	A	A	B
Arapahoe Basin Ski Area	68.3% (B)	Yes	Yes	B	B	B	B
<i>Beaver Creek Resort (#5)</i>	65.7% (C)	Yes	Yes	A	A	A	A
<i>Steamboat Ski & Resort (#10)</i>	64.8% (C)	Yes	Yes	A	A	A	A
<i>Winter Park Resort (#23)</i>	63.9% (C)	Yes	Yes	A	A	A	A
Eldora Mountain Resort	63.5% (C)	Yes	No	D	D	D	D
<i>Keystone Ski Resort (#21)</i>	62.6% (C)	Yes	Yes	A	A	A	A
<i>Copper Mountain Ski Resort (#18)</i>	54.5% (D)	Yes	Yes	B	A	A	A
<i>Breckenridge Ski Resort (#15)</i>	41.3% (D)	Yes	Yes	C	A	A	B
Idaho							
Bogus Basin Mountain Resort	81.3% (A)	Yes	No	D	D	D	D
Schweitzer Mountain Resort	79.6% (A)	Yes	Yes	C	B	B	B
Pebble Creek Ski Area	68.3% (B)	Yes	No	D	D	D	D
Silver Mountain Ski Resort	58.3% (C)	No	No	D	D	D	D
Brundage Mountain Resort	55.0% (D)	Yes	Yes	C	C	C	C
<i>Sun Valley Resort (#7)</i>	48.3% (D)	Yes	Yes	C	B	B	B
Montana							
Moonlight Basin Resort	76.3% (B)	No	Yes	C	A	A	B
Bridger Bowl Ski Area	73.5% (B)	Yes	Yes	A	B	B	B
<i>Big Sky Resort (#22)</i>	69.1% (B)	Yes	Yes	C	A	A	B
<i>Whitefish Mountain Resort (#19)</i>	64.5% (C)	Yes	No	D	D	D	D
Red Lodge Resort	62.6% (C)	Yes	No	D	D	D	D
Lost Trail Ski Area	62.3% (C)	Yes	No	D	D	D	D
Montana Snowbowl	61.7% (C)	Yes	Yes	C	A	B	B
Nevada							
Mt. Rose - Ski Tahoe	70.7% (B)	Yes	Yes	A	A	B	A
Las Vegas Ski & Snowboard	57.3% (D)	No	Yes	A	B	B	B
New Mexico							
Ski Apache	67.4% (C)	No	No	D	D	D	D
Red River Ski Area	65.2% (C)	Yes	No	D	D	D	D
Ski Santa Fe	61.3% (C)	No	No	D	D	D	D
<i>Taos Ski Valley (#27)</i>	52.2% (D)	Yes	Yes	A	C	C	B
Oregon							
Mount Bachelor Ski Area	74.9% (B)	Yes	Yes	C	B	C	C
Mount Hood Meadows Resort	67.0% (C)	Yes	Yes	B	A	B	B
Timberline Lodge and Ski Area	66.1% (C)	Yes	Yes	B	C	D	C
Mt. Ashland Ski Area	62.0% (C)	Yes	Yes	A	B	B	B

Utah

<i>Park City Mountain Resort (#4)</i>	86.5% (A)	Yes	Yes	B	B	B	B
<i>Deer Valley Resort (#1)</i>	83.0% (A)	Yes	Yes	A	A	A	A
Sundance Resort	82.2% (A)	Yes	Yes	A	B	B	B
<i>Alta Ski Area (#28)</i>	72.6% (B)	Yes	Yes	A	A	A	A
<i>Snowbird Ski Resort (#25)</i>	65.9% (C)	Yes	Yes	A	A	A	A
<i>The Canyons Resort (#20)</i>	65.8% (C)	Yes	Yes	B	B	B	B
Brighton Resort	64.4% (C)	Yes	Yes	C	B	B	B
<i>Snowbasin Resort (#29)</i>	63.3% (C)	Yes	No	D	D	D	D
Brian Head Resort	58.1% (C)	No	No	D	D	D	D
<i>Solitude Mountain Resort (#26)</i>	56.4% (C)	Yes	No	D	D	D	D

Washington

Mission Ridge	76.2% (B)	Yes	Yes	A	A	A	A
Stevens Pass	75.6% (B)	Yes	Yes	A	A	A	A
The Summit at Snoqualmie	69.4% (B)	Yes	Yes	C	A	A	B
Crystal Mountain	69.3% (B)	Yes	Yes	A	A	A	A
Mt. Baker Ski Area	68.7% (B)	No	No	D	D	D	D
Mt. Spokane Ski and Snowboard Park	66.5% (C)	Yes	No	D	D	D	D
49° North Resort	58.9% (C)	Yes	No	D	D	D	D
White Pass Ski Area	52.6% (D)	Yes	No	D	D	D	D

Wyoming

<i>Jackson Hole Mountain Resort (#12)</i>	82.6% (A)	Yes	Yes	A	A	A	A
Grand Targhee Resort	79.5% (A)	Yes	Yes	B	A	A	A

68.88% 74 60 (73%)

Total Ski Resorts = 82

Top 29 in the west 69.12% all 26 (90%)

Note: The italicized resorts were ranked as the top 29 ski areas by the readers of SKI Magazine in 2010 (their specific position in the ranking is provided).

Appendix B: The Ski Area Citizens' Coalition (SACC) Grading Methodology

Included below is an overview of the grading methodology for the SACC Report Cards. Further detail regarding the grading procedures can be accessed at the SACC website under the section "How We Grade"

(http://www.skiareacitizens.com/index.php?nav=how_we_grade).

Criteria Summary

A. Habitat Protection (104 Points)

1. Maintaining Ski Terrain Within the Existing Footprint (30 points)
2. Preserving Undisturbed Lands from Development (31 points)
3. Protecting or Maintaining Threatened, Endangered, Sensitive, or Candidate Species and Their Habitat (22 points)
4. Preserving Environmentally Sensitive Areas (21 points)

B. Protecting Watersheds (35 Points)

5. Protecting/Preserving Wetlands (9 points)
6. Protecting Water Quality (12 points)
7. Water Conservation (14 points)

C. Addressing Global Climate Change (50 Points)

8. Conserving energy by avoiding new snowmaking. (10pts)
9. Renewable Energy (17 points)
10. Energy Efficiency (14 points)
11. Transportation (9 points)

D. Environmental policies and practices (41 points)

12. Environmental Policy Positions and Advocacy (17 points)

13. Waste Stream Management (9 points)

14. Purchasing (8 points)

15. Environmental Reporting and Accountability (5 points)

16. Community Sustainability (2 points)

Total Possible = 230 points

Numerical Score = (Total points attained / 230) * 100

Letter Grade:

A = 77.9 - 100%

B = 67.9 – 77.9%

C = 57.9 - 67.9%

D = 39.9 – 57.9.9%

F = Less than 39.9%

Appendix C: The Sustainable Slopes Program (SSP) Charter

Provided in the following pages is the Environmental Charter of the Sustainable Slopes Program (NSAA, 2005). The Charter was created along with the Sustainable Slopes Program in 2000 and subsequently updated in 2005. The Charter is included in its entirety sans the list of endorsing resorts as the 2005 information is now outdated. A list of the ski resorts included in this study that endorse the SSP is provided in Appendix A.

FOREWORD

As a society, we find ourselves needing more than ever to escape every day pressures by heading for the outdoors. With that increasing demand comes impacts and a number of emerging environmental concerns that must be addressed proactively. The ski industry adopted this Environmental Charter in 2000 as a framework for sustainability in our operations. We are revising it today to renew our commitment to responsible stewardship and foster improved environmental performance industry-wide.

The premier alpine recreation sites we have today were made possible through the vision, pioneering spirit and hard work of our industry's founders. The value of those efforts holds today, as resorts are showcases of quality recreation opportunities for skiers, snowboarders, and countless summer guests as well. Although many forces may draw us to the slopes—the thrill and excitement of sliding down a mountain, the chance to reconnect with family and friends—we can never underestimate the value of the natural surroundings in renewing the human spirit. We respect the natural settings that we call home and hope that through our current efforts, we will preserve this same experience for future generations to enjoy.

—Michael Berry, National Ski Areas Association President
December 2005

INTRODUCTION

2005 marks the five-year anniversary for Sustainable Slopes and the first revision to the Environmental Charter. This revision ensures that our Principles are current and reflect the latest technology and best management practices to foster continuing improvement in environmental performance. It also acknowledges and incorporates emerging resources available from our Partnering Organizations as well as specific new 'options for getting there' from endorsing resorts.

NSAA is the facilitator for this Industry-led Initiative to raise the collective environmental performance of the ski Industry. In this role, partner and resort feedback remains critical to the success of Sustainable Slopes. We always welcome your input.

ENVIRONMENTAL VISION STATEMENT

To be leaders among outdoor recreation providers by managing our businesses in a way that demonstrates our commitment to environmental protection and stewardship while meeting public expectations.

ENVIRONMENTAL MISSION STATEMENT

We are committed to improving environmental performance in all aspects of our operations and managing our areas to allow for their continued enjoyment by future generations.

PARTNERING ORGANIZATIONS

The Partnering Organizations listed below support the Industry's development of the Principles and are committed to working with the Industry on their particular areas of expertise and interest.

Bonneville Environmental Foundation
Colorado Department of Public Health & Environment
Conservation Law Foundation
U.S. Department of Energy
U.S. Environmental Protection Agency
USDA Forest Service
Leave No Trace Inc.
The Mountain Institute
National Fish & Wildlife Foundation
National Park Service Concession Program
New York State Department of Environmental Conservation
Teton County, Wyoming
Trust For Public Land
Wildlife Habitat Council

PARTICIPATING ORGANIZATIONS

We thank the following organizations for providing input on the Principles and sharing their unique perspectives. Participation does not imply that these individuals or organizations support the Principles.

The Alford Design Group, Inc.	ORCA – Trade Association of the Outdoor Industry
Bonneville Environmental Foundation	Pacific Northwest Ski Areas Association
The Brendle Group	Park City Municipal Corporation
Cirrus Ecological Solutions	Pioneer Environmental Services, Inc.
Citizens Allied for Responsible Growth	Outward Bound USA
Colorado Department of Public Health & Environment	Salt Lake Organizing Committee for the Olympic Winter Games of 2002
Colorado Mountain College – Ski Area Operations	S.E. Group
Colorado Ski Country USA	Sierra Club – Utah
Conservation Law Foundation	Sierra Club – West Virginia
Economics Research Associates	Ski Areas of New York
Environmental Defense	SKI Magazine
Green Mountain Club	Ski Maine Association
The Grosavold Ski Company	The Citizens Committee to Save Our Canyons
Innovation Works	Surfrider Foundation/Snowrider
Interior West Center	Teton County, Wyoming
Jack Johnson Company	Town of Mammoth Lakes
Kimley-Horn & Associates, Inc.	Trout Unlimited – Colorado Chapter
Leave No Trace Inc.	Trout Unlimited – Oregon Chapter
Lyndon State College	Trout Unlimited – Utah Chapter
The Mountain Institute	Trust for Public Land
National Environmental Trust	University of Colorado – Center for Sustainable Tourism
National Fish and Wildlife Foundation	U.S. Department of Energy
National Park Service	U.S. Environmental Protection Agency
Natural Resources Defense Council	U.S. Forest Service
The Nature Conservancy	Vermont Natural Resources Council
Normandeau Associates	Vermont Ski Areas Association
North Fork Preservation Alliance/Sundance Resort	
Northwest Colorado Council of Governments QIQ Committee	

ENVIRONMENTAL CHARTER FOR SKI AREAS

Preamble

OUR VALUES

- Like their guests, ski area operators and employees enjoy the outdoors and appreciate the alpine environment as their home. A strong environmental ethic underlies our operations, makes us stewards of the natural surroundings, and is the basis for our commitment to constant improvement in environmental conditions.
- The recreation opportunities that ski areas provide contribute to improving the quality of life for millions of people each year, and the natural surroundings greatly enhance those experiences. In providing quality, outdoor recreation opportunities, we strive to balance human needs with ecosystem protection.
- Ski areas are well suited to accommodate large numbers of visitors because of their infrastructure and expertise in managing the impacts associated with those visits. By providing facilities for concentrated outdoor recreation in limited geographic areas, ski areas help limit dispersed impacts in more remote, wild areas.
- Ski areas operate within, and are dependent on, natural systems including ecological, climatic and hydrological systems. These dynamic systems can affect our operations, just as we affect them. We are committed to working with stakeholders to help understand and sustain the diversity of functions and processes these systems support.
- In addition, ski areas operate within rural and wild landscapes that are valued for their scenic, cultural, and economic characteristics. We are committed to working with stakeholders to understand and help maintain those characteristics that make these landscapes unique.
- We are committed to actively addressing the long-term challenges presented by climate change. Although we are not a major source of greenhouse gas (GHG) emissions, many resorts across the country already are taking steps to reduce their own, limited GHG emissions in their operations. We adopted a climate change policy in 2002 and launched the "Keep Winter Cool" campaign in 2003 with our partner, the Natural Resources Defense Council (NRDC). Please see the attached Climate Change Policy for more information on our commitment and effort to fight global warming.

- Along with environmental concerns, ski area operators are deeply concerned with the safety of our guests. We take safety into account in the design and operation of ski areas and in some situations need to place the highest priority on safety.

BACKGROUND ON THE PRINCIPLES

- The ski industry is composed of a diverse group of companies, varying in size, complexity, accessibility to resources, and geographic location. These Principles are meant to be a useful tool for all ski areas, from local ski hills to four season destination resorts, whether on public or private land. Our vision is to have all ski areas endorse these Principles and make a commitment to implementing them. Some smaller areas that endorse these Principles may be limited in their ability to make progress in all of the areas addressed.
- The Principles are voluntary and are meant to provide overall guidance for ski areas in achieving good environmental stewardship, not a list of requirements that must be applied in every situation. Recognition must be made that each ski area operates in a unique local environment or ecosystem and that development and operations may reflect these regional and operational differences. Each ski area must make its own decisions on achieving sustainable use of natural resources. While ski areas have the same goals, they can choose different options for getting there.
- The Principles are meant to go "beyond compliance" in those areas where improvements make environmental sense and are economically feasible. Ski areas should already be meeting all applicable federal, state, and local environmental laws and regulations. Through these Principles, we are striving to improve overall environmental performance, whether it be in the form of achieving efficiencies, sustaining resources or enhancing the public's awareness of our special environment.
- The Principles encourage ski areas to adopt the "avoid, minimize, mitigate" approach to natural resource management. Avoidance should be the first consideration when outstanding natural resources or settings are at stake.

¹ These Principles are voluntary and are not intended to create new legal liabilities, expand existing rights or obligations, waive legal defenses, or otherwise affect the legal position of any endorsing company, and are not intended to be used against an endorser in any legal proceeding for any purpose. The "Options for Getting There" listed under each Principle are meant to serve as examples—not an exhaustive list. See the Green Room environmental database (www.nsa.org) for more examples of the Principles in action.

- The Principles recognize that ski areas have some unavoidable impacts. At the same time, ski areas strive to maintain the integrity of the environments in which they operate by contributing to the sense of place in mountain communities and being responsible stewards of natural resources.
- The Principles are aimed at improving environmental performance at existing ski areas, and can serve as helpful guidance for planning new developments. The Principles cannot fully address when and where new ski area development should occur, as that issue should be addressed on the merits of each individual project and in consideration of the specific characteristics of a particular location. What might be beneficial development in one location could be inappropriate elsewhere.
- Ski areas are concerned about the larger issues of growth and sustainable development in mountain communities. Key issues of community planning, such as protecting viewsheds, quality of life, and open space, are inherently linked to our business and the quality of experience of our guests. While the Principles cannot address fully some of the larger issues of growth in mountain communities, the ski industry is committed to working with stakeholders to make progress on these issues of concern to mountain communities. Many of the concepts in these Principles can provide leadership in confronting those issues.
- The Principles were developed through a collaborative dialogue process where input and awareness, not necessarily consensus on every issue or by every group, was the goal. We revised the Principles in 2005 with input from Partnering Organizations, NSAA's Environmental Committee and others. The Principles represent the major areas of agreement for ski areas and Partnering Organizations.
- These Principles are a collective step in demonstrating our commitment to environmental responsibility. We hope that this initiative will help us better engage our stakeholders in programs and projects to improve the environment.



ENVIRONMENTAL PRINCIPLES

VOLUNTARY ENVIRONMENTAL PRINCIPLES¹ FOR SKI AREA PLANNING, OPERATIONS AND OUTREACH

PLANNING, DESIGN AND CONSTRUCTION

In planning and designing trails, base areas and associated facilities, ski areas should explore ways of integrating our operations into natural systems and addressing short and long-term environmental impacts to natural resources. There may also be opportunities to address past disturbances from historical uses and mitigate unavoidable impacts from future disturbances.

Principles

- ◆ Engage local communities, environmental groups, government agencies and other stakeholders in up front and continuing dialogue on development plans and their implementation
- ◆ Assess environmental concerns and potential restoration opportunities at local and regional levels
- ◆ Plan, site and design trails, on-mountain facilities and base area developments in a manner that respects the natural setting and avoids, to the extent practical, outstanding natural resources
- ◆ Emphasize nature in the built environment of the ski area
- ◆ Make water efficiency, energy efficiency and clean energy use and materials efficiency priorities in the design of new facilities and upgrades to existing facilities
- ◆ Use high-density development or clustering to reduce sprawl, provide a sense of place, reduce the need for cars and enhance the pedestrian environment
- ◆ Meet or exceed requirements to minimize impacts associated with ski area construction

Options for getting there

- ✓ Engage stakeholders collaboratively on the siting of improvements and the analysis of alternatives
- ✓ Complement local architectural styles, scale, and existing infrastructure to enhance the visual environment and create a more authentic guest experience
- ✓ Respect outstanding natural resources and consider the physical "carrying capacity" of the local ecology in planning new projects
- ✓ Use simulation or computer modeling in planning to assist with analyzing the effects of proposals on key natural

- resources and viewsheds, such as visual modeling or GIS
- ✓ Design trails with less tree removal and vegetation disturbance, recognizing safety concerns
- ✓ Incorporate green building principles, such as using energy, water and material efficiency techniques and sustainable building practices
- ✓ Use long-life, low maintenance building materials and locally-sourced materials as available
- ✓ Include parks, open space and native landscaping in base area and building developments
- ✓ Seek opportunities for environmental enhancement and restoration
- ✓ Maximize alternate transportation modes in and around the base area
- ✓ Minimize road building where practical
- ✓ Develop and select best management practices (BMPs) for construction sites with stakeholder input
- ✓ Apply sound on-mountain construction practices, such as over-snow transport techniques, stormwater control, or phasing of activities to minimize disturbances to natural habitats
- ✓ Screen contractors, designers and consultants for environmental credentials
- ✓ Develop Sustainable Design Guidelines
- ✓ Seek LEED® (Leadership in Energy & Environmental Design) certification through the U.S. Green Building Council

OPERATIONS

In the day-to-day operation of ski areas and associated facilities, there are many opportunities for stewardship, conserving natural resources, and increasing efficiencies. Taking advantage of these opportunities will not only benefit the environment, but can also result in long-term cost savings.

WATER RESOURCES

Water is an important resource for ski areas as well as the surrounding natural environments and communities, and should be used as efficiently and effectively as possible.

WATER USE FOR SNOWMAKING

- ◆ Optimize efficiency and effectiveness of water use in snowmaking operations
- ◆ Conduct snowmaking operations in a manner that protects minimum stream flows and is sensitive to fish and wildlife resources (see Fish & Wildlife Principles on page 11).

Options for getting there

- ✓ Use appropriate, modern technology and equipment to optimize efficiency
- ✓ Inspect and monitor systems to reduce water loss
- ✓ Use reservoirs or ponds to store water for use during low flow times of the year and to maximize efficiency in the snowmaking process
- ✓ Work with local water users and suppliers to promote in-basin storage projects to offset low flow times of the year
- ✓ Install water storage facilities to recapture snowmelt runoff for reuse
- ✓ Inventory water resources and monitoring seasonal variations in stream flows
- ✓ Support and participate in research on the ecological impacts of snowmaking
- ✓ Re-use wastewater for snowmaking as appropriate
- ✓ Use computerized snowmaking equipment for improved effectiveness with respect to air compression and better efficiency with respect to water use
- ✓ Use dirt or other alternative methods for constructing terrain features to minimize water use

WATER USE IN FACILITIES

Principle

- ◆ Conserve water and optimize efficiency of water use in ski area facilities

Options for getting there

- ✓ Conduct water use audits and investigate methods and alternative technologies to reduce water consumption
- ✓ Install water efficient equipment in facilities such as low-flow faucets and toilets
- ✓ Install no-flow fixtures such as waterless urinals and composting toilets
- ✓ Participate in existing water conservation and linen and towel re-use programs for lodging such as EPA's WAVE® and Project Planet® programs
- ✓ Educate guests and employees about the benefits of water conservation

- ✓ Purchase and use of water efficient appliances such as dishwashers and clothes washers
- ✓ Avoid use of garbage disposals through composting
- ✓ Use ozone laundry systems

WATER USE FOR LANDSCAPING AND SUMMER ACTIVITIES

Principle

- ◆ Maximize efficiency in water use for landscaping and summer activities

Options for getting there

- ✓ Incorporate water efficiency BMPs in planning and design phases
- ✓ Plan summer uses in conjunction with winter uses to maximize the efficiency of necessary infrastructure
- ✓ Use drought-tolerant plants in landscaped areas
- ✓ Use native plant species where appropriate
- ✓ Use water efficient irrigation and recycling/reuse technologies
- ✓ Use soil amendments to increase water retention and reduce watering requirements
- ✓ Inspect and monitor systems to reduce water loss
- ✓ Water at appropriate times to minimize evaporation
- ✓ Educate employees about efficient water use and conservation
- ✓ Seek Audubon Cooperative Sanctuary System (ACSS) certification from Audubon International
- ✓ Use computerized irrigation equipment

WATER QUALITY MANAGEMENT

Principle

- ◆ Strive to exceed water quality-related requirements governing ski area operations

Options for getting there

- ✓ Participate in watershed planning, monitoring and restoration efforts
- ✓ Use appropriate erosion and sediment control practices such as water bars, revegetation and replanting
- ✓ Maintain stream vegetative buffers to improve natural filtration and protect habitat
- ✓ Apply state-of-the-art or other appropriate stormwater management techniques
- ✓ Employ stormwater mitigation to minimize and mitigate runoff and effluents
- ✓ Utilize oil/water separators in maintenance areas and garages

- ✓ Use environmentally sensitive deicing materials
- ✓ Encourage guests to follow Leave No Trace™ or similar principles of outdoor ethics

WASTEWATER MANAGEMENT

Principle

- ◆ Manage wastewater in a responsible manner

Options for getting there

- ✓ Plan for present and future wastewater needs with adjacent communities
- ✓ Use appropriate wastewater treatment technology or alternative BMPs to protect water quality
- ✓ Connect septic systems to municipal wastewater systems where appropriate
- ✓ Explore the use of decentralized or on-site treatment technologies where appropriate
- ✓ Reclaim wastewater for treatment
- ✓ Re-use treated wastewater or greywater where allowable for non-potable uses and appropriate applications
- ✓ Monitor wastewater quality
- ✓ Use Living Machines

ENERGY CONSERVATION AND CLEAN ENERGY

Ski areas can be leaders in implementing energy efficiency techniques and increasing the use of renewable energy within their operations to conserve natural resources, reduce pollution and greenhouse gases and reduce the potential impacts of climate change.

ENERGY USE FOR FACILITIES

Principles

- ◆ Reduce overall energy use in ski area facilities
- ◆ Use cleaner or renewable energy in ski area facilities
- ◆ Strive to exceed energy standards in new or retrofit projects

Options for getting there

- ✓ Audit current usage levels and target areas for improvement
- ✓ Establish seasonal baseline usage amounts and indicators (e.g., kWh/ft²)
- ✓ Develop an energy management plan that addresses short and long term energy goals, staffing, and schedules for new and retrofit projects

- ✓ Orient buildings and their windows to maximize natural light penetration, reduce the need for artificial lighting and facilitate solar heating and photovoltaic electricity generation
- ✓ Use solar heating or geothermal heat pumps for radiant heating
- ✓ Utilize building automation systems
- ✓ Use lighting controls systems, including timer controls and occupancy sensors
- ✓ Perform lighting retrofits to provide more energy efficient lamps and retrofit exit signs to use low watt bulbs
- ✓ Periodically recommission building heating, ventilating and air-conditioning systems, (e.g., calibrate thermostats and fine tune heating systems)
- ✓ Use peak demand mitigation, distributed, on-site power generation and storage, and real time monitoring of electricity use
- ✓ Work with utilities to manage demand and take advantage of cost sharing plans to implement energy savings
- ✓ Enter into load sharing agreements with utilities for peak demand times
- ✓ Partner with the U.S. Department of Energy and state energy and transportation departments to assist with energy savings and transit programs
- ✓ Participate in energy efficiency programs such as EPA/DOE's Energy Star™
- ✓ Educate employees, guests and other stakeholders about energy efficient practices and conservation
- ✓ Install high efficiency windows, ensure that all windows and doorways are properly sealed, and use insulation to prevent heating and cooling loss
- ✓ Minimize energy used to heat water by using low-flow showerheads, efficient laundry equipment, and linen and towel re-use programs
- ✓ Invest in cleaner or more efficient technologies for power generation, including wind, micro-hydro, geothermal, and solar power generation, fuel cells and natural gas turbines and generation from biomass residues and wastes
- ✓ Purchase renewable 'green power,' such as wind-generated power, from energy providers

ENERGY USE FOR SNOWMAKING

Principles

- ◆ Reduce energy use in snowmaking operations
- ◆ Use cleaner energy in snowmaking operations

Options for getting there

- ✓ Use modern, high efficiency snow guns and air compressors for snowmaking operations
- ✓ Upgrade diesel motors or convert them to alternative clean energy generation sources
- ✓ Use real time controls, sensors and monitoring systems to optimize the system and reduce electrical demand
- ✓ Use on-mountain reservoirs and ponds to gravity feed snowmaking systems
- ✓ Use distributed, on-site power generation to avoid or reduce peak demands from the utility grid
- ✓ Purchase renewable 'green power' from energy providers
- ✓ Utilize variable speed drives on pumping systems

ENERGY USE FOR LIFTS

Principles

- ◆ Reduce energy use in lift operations
- ◆ Use cleaner energy in lift operations

Options for getting there

- ✓ Use modern, high efficiency motors
- ✓ Upgrade diesel motors or use alternative clean energy sources such as fuel cells, microturbines or biodiesel fuels
- ✓ Use renewable energy sources
- ✓ Purchase renewable 'green power' from energy providers

ENERGY USE FOR VEHICLE FLEETS

Principles

- ◆ Reduce fuel use in ski area vehicles
- ◆ Use cleaner fuel

Options for getting there

- ✓ Provide shuttles or transportation for guests and employees
- ✓ Adopt a company-wide vehicle idling time limit policy
- ✓ Use energy efficient vehicles
- ✓ Use alternative fuel such as biodiesels or hybrid electric engines in ski area fleet vehicles including shuttles, trucks, snowcats and loaders
- ✓ Conduct regular maintenance on fleet vehicles
- ✓ Convert ski area snowmobile fleet to 4-stroke engines

WASTE MANAGEMENT

The Principles below incorporate the "REDUCE, REUSE, RECYCLE" philosophy of waste management to help ensure materials are being used efficiently and disposed of only after consideration is given to reusing or recycling them. Reducing waste helps protect natural resources, reduce pollution, greenhouse gases and energy use by decreasing the need to produce new materials, and minimizes disposal costs.

WASTE REDUCTION

Principle

- ◆ Reduce waste produced at all ski area facilities

Options for getting there

- ✓ Conduct a waste stream audit to establish a baseline, identify material types and amounts of each, and track progress toward reduction
- ✓ Purchase recycled products
- ✓ Purchase products in bulk to minimize packaging materials
- ✓ Adopt a company-wide green purchasing policy
- ✓ Request vendors to provide "take-back" services for used products
- ✓ Deconstruct buildings and facilities
- ✓ Educate guests and employees about reducing waste amounts generated at the area and following Leave No Trace™ or similar principles such as "pack it in, pack it out"
- ✓ Develop a waste reduction plan

PRODUCT REUSE

Principle

- ◆ Reuse products and materials

Options for getting there

- ✓ Use washable or compostable tableware/silverware in cafeterias and lodges
- ✓ Encourage guests to reuse trail maps
- ✓ Compost food wastes, grass clippings, and woody debris for use in landscaping and revegetation or erosion control areas
- ✓ Explore opportunities for reusing products (e.g. building materials from deconstruction, lift parts and equipment, and office supplies)
- ✓ Join EPA's WasteWise® program

RECYCLING

Principle

- ◆ Increase the amount of materials recycled at ski areas

Options for getting there

- ✓ Make recycling easy and convenient for guests by offering containers and displaying signage in facilities and lodges
- ✓ Recycle mixed paper, cardboard, aluminum, glass, plastic, scrap metal and food service waste
- ✓ Deconstruct and recycle building materials as an alternative to landfilling
- ✓ Partner with local government and other businesses on recycling in remote communities where recycling programs are not readily available
- ✓ Encourage vendors to offer recycled material products for purchase
- ✓ Educate guests and train employees on recycling practices
- ✓ Adopt a green purchasing policy that sets purchasing specifications to favor recycled content
- ✓ Specify a portion of new construction materials to require recycled content
- ✓ Partner with community recycling groups to market available recyclables

POTENTIALLY HAZARDOUS WASTES

Principle

- ◆ Minimize the use of potentially hazardous materials, the generation of potentially hazardous wastes and the risk of them entering the environment

Options for getting there

- ✓ Safely store, segregate and properly dispose of potentially hazardous materials such as solvents, cleaning materials, pesticides and paints
- ✓ Collect and recycle waste products such as used motor oil, household appliance batteries, tires and unused solvents
- ✓ Reshelve and reuse partially used containers of paint, solvents, and other materials and properly dispose of empty containers
- ✓ Purchase non-hazardous products for use when effective
- ✓ Properly manage fuel storage and handling
- ✓ Maintain or upgrade equipment to prevent leaks
- ✓ Initiate programs to reduce the occurrence of accidental spills or releases

- ✓ Install sedimentation traps in parking lots
- ✓ Educate employees on the requirements for properly handling and cleaning up hazardous wastes
- ✓ Redesign spent solvents
- ✓ Coordinate with local area emergency planning councils for response in case of a spill or release

FISH AND WILDLIFE

Ski areas operate within larger ecosystems and strive to be responsible stewards of fish and wildlife habitats. They need the cooperation of other landowners, managers, local communities and other stakeholders for an effective ecosystem management approach. There are measures ski areas can take to better understand, minimize, and mitigate impacts to fish and wildlife, and in some cases, enhance habitat, particularly for species of concern. The benefits of these measures include promoting biodiversity and the natural systems that attract guests to the mountain landscape.

Principle

- ◆ Minimize impacts to fish and wildlife and their habitat and maintain or improve habitat where possible

Options for getting there

- ✓ Support and participate in research of fish and wildlife populations and their interactions with ski areas
- ✓ Inventory and monitor fish and wildlife and their habitat, particularly protected species
- ✓ Use snowmaking storage ponds or reservoirs to store water for use during times of low stream flows to help protect aquatic habitat
- ✓ Conduct activities and construction with consideration of seasonal wildlife patterns and behavior
- ✓ Site and design trails and facilities to include gladed skiing areas and link ungladed areas to maintain blocks of forested corridors and inter-trail islands to reduce fragmentation
- ✓ Limit access to, or set aside, certain wildlife habitat areas
- ✓ Use wildlife-proof dumpsters or trash containers
- ✓ Create or restore habitat where appropriate, either on- or off-site
- ✓ Use land conservation techniques, such as land exchanges and conservation easements, as vehicles for consolidating or protecting important wildlife habitat
- ✓ Participate in ecosystem-wide approaches to wildlife management

- ✓ Provide wildlife education programs for employees, guests, and the local community such as the Leave No Trace™ Principles of respecting wildlife
- ✓ Achieve Audubon Cooperative Sanctuary System (ACSS) certification from Audubon International
- ✓ Participate in Wildlife Habitat Council's Habitat Certification/International Accreditation Program

FOREST AND VEGETATIVE MANAGEMENT

Ski areas recognize the importance of responsible stewardship in managing the forests and vegetation that support ecosystems and allow for public recreation opportunities. Sound forest and vegetative management can benefit fish and wildlife habitat, protect water quality and watersheds, and reduce erosion, pollution, and greenhouse gases.

Principle

- ◆ Manage effects on forests and vegetation to allow for healthy forests and other mountain environments

Options for getting there

- ✓ Inventory and monitor forest and vegetative resources
- ✓ Adopt vegetative management plans
- ✓ Minimize the removal of trees through the careful siting and design of trails
- ✓ Use over-snow skidding to remove logs for new runs during times of sufficient snow cover
- ✓ Trim branches or top trees instead of removal where possible
- ✓ Use aerial logging where economically feasible
- ✓ Employ practices to control invasive or noxious weeds
- ✓ Remove dead and diseased trees, with consideration to habitat value, to promote healthy forests and public safety
- ✓ Revegetate roads that are no longer used
- ✓ Revegetate disturbed areas with native plant species and grasses, recognizing that faster growing, non-native species may be needed to address erosion
- ✓ Revegetate disturbed areas as quickly as possible following disturbance
- ✓ Limit disturbance to vegetation during summer activities
- ✓ Assess the role of forest stands in reducing greenhouse gases
- ✓ Provide signage informing guests of sensitive vegetation areas
- ✓ Use traffic control measures, such as rope fences, on areas

with limited snow coverage to protect sensitive vegetation and alpine tundra

- ✓ Reduce or eliminate snowcat and snowmobile access to sensitive areas with limited snow coverage
- ✓ Plant at appropriate times to minimize water use while optimizing growth
- ✓ Employ wild fire mitigation programs and involve local residents
- ✓ Use forest thinnings from fire mitigation and ecological restoration projects to build and furnish facilities

WETLANDS & RIPARIAN AREAS

Ski areas recognize that wetlands and riparian areas are crucial components of the alpine ecosystems in which they operate.

Principle

- ◆ Avoid or minimize impacts to wetlands and riparian areas, and offset unavoidable impacts with restoration, creation or other mitigation techniques

Options for getting there

- ✓ Inventory and monitor wetland and riparian areas
- ✓ Limit snowmaking and grooming equipment access to wetlands and riparian areas if snow cover is inadequate to protect them
- ✓ Limit access to wetlands, riparian areas and vernal pools if snow cover is inadequate to protect them
- ✓ Engage in restoration, remediation and protection projects
- ✓ Establish buffers and setbacks from wetland and riparian areas in summer
- ✓ Manage snow removal and storage to avoid impacting wetlands and riparian areas as feasible
- ✓ Support or participate in research on functions of wetland habitats and riparian areas
- ✓ Use trench boxes to minimize impacts to forested wetlands from construction of utility lines

AIR QUALITY

Ski area guests and operators value fresh air as an integral part of the skiing experience. Although there are many sources in and around the community that, combined, may compromise air quality, ski areas can do their share to help minimize impacts. Some of the many benefits of cleaner air and reduced air pollution include enhanced visibility and lessening human influences on climate change, which is of particular concern to ski areas.

Principles

- ◆ Minimize negative impacts to air quality
- ◆ Reduce operations-related air pollution and greenhouse gas emissions as feasible

Options for getting there

- ✓ Reduce air pollutants and greenhouse gas emissions from buildings, facilities and vehicles through clean energy and transportation-related measures identified in these Principles
- ✓ Use dust abatement methods for dirt roads during summer operations and construction
- ✓ Revegetate as appropriate to control dust
- ✓ Reduce the sanding and cinderling of ski area roads by using alternative deicing materials
- ✓ Vacuum sweep paved parking lots and roads periodically
- ✓ Reduce burning of slash through chipping or other alternative uses
- ✓ Limit wood burning fireplaces or using cleaner burning woodstoves and fireplaces and install gas fireplaces
- ✓ Work with local and regional communities to reduce air quality impacts
- ✓ Purchase or support green energy

VISUAL QUALITY

Scenic values are critical to surrounding communities and guest experiences. Although ski area development is a part of the visual landscape in many mountain areas, it can be designed and maintained in a manner that complements the natural setting and makes the natural setting more accessible to guests. Where opportunities for collaboration exist, ski areas should work with appropriate partners in the protection of open lands that define the visual landscape in which their guests recreate.

Principles

- ◆ Create built environments that complement the natural surroundings
- ◆ Explore partnerships with land conservation organizations and other stakeholders that can help protect open lands and local viewsheds

Options for getting there

- ✓ Plan with landscape scenic values in mind
- ✓ Minimize ridgeline development where feasible
- ✓ Promote protection of open space elsewhere in the community to enhance regional viewsheds
- ✓ Apply local architectural styles and highlight natural features to minimize disruption of the visual environment and create a more authentic experience
- ✓ Use visual simulation modeling in siting, planning and design to assist in demonstrating visual effects of projects
- ✓ Design lifts and buildings to blend into the natural backdrop or complement the natural surroundings
- ✓ Construct trails to appear as natural openings
- ✓ Use non-reflective building products and earth tone colors on structures
- ✓ Plant trees or other vegetation to improve visual quality
- ✓ Incorporate low level lighting or directional lighting to reduce impacts of lights on the night sky while recognizing safety, security, and maintenance needs
- ✓ Keep parking areas free of debris and garbage
- ✓ Place existing and new utility lines underground to reduce visual impacts

TRANSPORTATION

Travel to and within ski areas has unavoidable impacts. Through transportation initiatives, ski areas can do their part to help ease congestion and impacts to air quality and improve the ski area experience. (See related topic of ski area vehicle fleets under Energy Principles.)

Principle

- ◆ Ease congestion and transportation concerns

Options for getting there

- ✓ Provide employee transportation benefits, including shuttles, bus passes or discounts, van pools, and ride-share incentives
- ✓ Provide and promote ski area guest transportation through shuttles or buses
- ✓ Offer and promote carpooling or HOV (high occupancy vehicle) incentives for guests such as discounts or preferred parking in proximity to lodges
- ✓ Offer and promote non-peak travel incentives for guests such as Sunday night stay discounts
- ✓ Increase density in base area development when appropriate to reduce the need for vehicle use
- ✓ Support and participate in transit initiatives in the community and region
- ✓ Work with travel agents to market and promote "car free" vacation packages

EDUCATION AND OUTREACH

Because of their setting in an outdoor, natural environment and the direct connection between that natural environment and the guest experience, ski areas have an excellent opportunity to take a leadership role in environmental education and in enhancing the environmental awareness of their guests, surrounding communities, and employees.

Principles

- ◆ Use the natural surroundings as a forum for promoting environmental education and increasing environmental sensitivity and awareness
- ◆ Develop outreach that enhances the relationship between the ski area and stakeholders to ultimately benefit the environment

Options for getting there

- ✓ Train employees and inform guests of all ages about the surrounding environment
- ✓ Promote the Environmental Code of the Slopes® and the Keep Winter Cool campaign (www.keepwintercool.org)
- ✓ Educate stakeholders about the Sustainable Slopes program
- ✓ Provide leadership and lobby on environmental concerns with particular importance to the alpine or mountain environment, such as climate change
- ✓ Dedicate personnel to environmental concerns and incorporate environmental performance measures and expectations into departmental goals
- ✓ Dedicate a portion of the ski area's website to environmental excellence and Sustainable Slopes and contribute entries to the Green Room on-line environmental database
- ✓ Offer environmental education and awareness programs that provide on-mountain instruction and offer classroom information for use in schools
- ✓ Partner with local school systems, businesses and the public on initiatives and opportunities for protecting and enhancing the environment
- ✓ Display interpretive signs on forest resources, vegetative management and fish and wildlife
- ✓ Publicly address environmental considerations in stated company values, policies or mission statements
- ✓ Issue an annual environmental report or release annual environmental data
- ✓ Offer guests the opportunity to reduce their own environmental impacts associated with travel to and from the ski area by purchasing Cool Tags,™ mini Green Tags,™ or similar products
- ✓ Provide guests the opportunity to purchase green energy for their homes by partnering with local utilities
- ✓ Create funding mechanisms for environmental outreach projects, both in-house as well as in the community
- ✓ Encourage employees to participate in community environmental initiatives
- ✓ Ask guests their opinions about ski area environmental programs and initiatives and use their feedback to improve programs and guests' experiences.

CLIMATE CHANGE POLICY

To collectively address the long-term challenges presented by climate change, resorts adopted a climate change policy in 2002. Although we are not a major source of warming pollutants, we are already taking steps to reduce our greenhouse gas (GHG) emissions in our operations. We also launched the Keep Winter Cool Program in 2003 along with our partner, the Natural Resources Defense Council (NRDC).

Through this policy, we aim to raise awareness of the potential impacts of climate change on our weather-dependent business and the winter recreation experience; reduce our own greenhouse gas emissions; and encourage others to take action as well. We are committed to working toward solutions that will keep both the environment and economy healthy and preserve quality of life. To this end, we will take the following actions:

- Educate the public and resort guests about the dependence of winter sports on natural ecosystems and the potential impacts of climate change on the winter recreation experience; educate guests on how they can help reduce GHG emissions.
- Raise policy maker awareness of the dependence of winter sports on natural ecosystems and the potential impacts of climate change on the winter recreation experience.
- Advocate the national reduction of GHG emissions through legislative, regulatory or voluntary measures.
- Support sound, science-based solutions to climate change, including the use of renewable energy technologies.
- Partner with appropriate organizations and agencies to assess opportunities to reduce resort emissions and increase energy efficiency; invest in new, more efficient products, practices and technologies; and measure our emission reductions.

ENVIRONMENTAL CODE OF THE SLOPES®

❖ Follow the Leave No Trace™ Principles of outdoor ethics when visiting ski areas

- **Dispose of waste properly:** Recycle your glass, plastics, aluminum and paper at resorts. Reuse trail maps on your next visit or recycle them rather than throwing them away. Never throw trash, cigarette butts or other items from the lifts.
 - **Respect wildlife:** Observe trail closures, seasonal closures, and ski area boundaries. These closures are in place not only for your safety, but the well-being of plants and animals located in sensitive areas. In summer, stick to designated trails when hiking and biking to avoid disturbances to vegetation and wildlife.
 - **Be considerate of other guests:** Respect other guests, protect the quality of their experience, and let nature's sounds prevail.
- ❖ Carpool with friends and family or use transit to reduce warming pollutants as well as traffic and congestion.
- ❖ Turn off the lights when leaving your room and reuse bath towels and linens to help conserve energy and water.
- ❖ Use washable tableware and silverware in cafeterias and lodges instead of paper or plastics to help us reduce waste.
- ❖ Take advantage of environmental or alpine education programs offered at ski areas to learn more about the surrounding environment and how to help protect it.
- ❖ If you have kids, get them involved in environmental and alpine education programs at a young age.
- ❖ Support "clean up days" or other environmental programs at your local ski area.
- ❖ Provide feedback and let ski areas know how they can improve their environmental performance.

Visit www.nsaa.org for more information on Sustainable Slopes.

KEEP WINTER COOL™

WHAT SKIERS AND SNOWBOARDERS CAN DO TO HELP STOP CLIMATE CHANGE

❖ MAKE A CLEAN GETAWAY

When buying your next car, pick the least-polluting, most efficient vehicle that meets your needs. Maybe it's an innovative hybrid that combines a gasoline engine with electric motors (and never needs to be plugged in). Be on the lookout for new hybrid SUVs on the market.

❖ DON'T BE A DRAG

Take your ski rack off your car and replace your snow tires with your regular tires at the end of the season. Both could save you 6 percent at the pump. A tune-up could boost your miles per gallon anywhere from 4 to 40 percent. A new air filter could get you 10 percent more miles per gallon.

❖ SHARE A RIDE

When heading for the hills, carpool or take transit or shuttles to help reduce greenhouse gas (GHG) emissions associated with your travel.

❖ BE AN EFFICIENT CONSUMER

Believe it or not, picking the right appliances, air conditioners and computers can make a big difference in reducing pollution from power plants. So look for the most energy-efficient models. You might have to spend a bit more up front, but you'll save on electricity bills.

❖ HAVE A BRIGHTER IDEA

Those curly compact fluorescent light bulbs will lower your energy bills by about \$15 a year (more than \$60 over its lifetime). It will also keep half a ton of carbon dioxide out of the air. Ski resorts are using them by the hundreds! While compact fluorescents are more expensive than regular bulbs they last up to 10 times as long, too.

❖ CONSIDER CLEANER ENERGY

If you live in a state that lets you choose your power company, pick one that generates at least half its power from wind, solar energy or other clean sources. If you don't have the option to select a supplier yet, you might still be able to support renewable energy through an option on your electricity. Another way to help spur the renewable energy market and cut global warming pollution is to buy "wind certificates," "Green Tags"™ or "Cool Tags."™ They represent clean power you can add to the nation's energy grid in place of electricity from fossil fuels.

❖ STAND UP AND BE COUNTED

Contact your elected representatives and ask them to do more to reduce CO₂ emissions and keep winter cool for skiing and snowboarding.

❖ SPREAD THE WORD

Tell your liftmates, family and friends about the Keep Winter Cool campaign.

Keep Winter Cool is a partnership between NSAA and NRDC.
Visit www.keepwintercool.org for more information.